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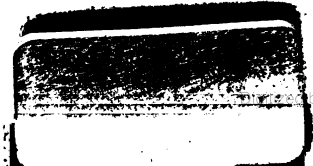
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RAILWAY AND TRAFFIC PROBLEMS

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THE ECONOMIC NECESSITY FOR THE PENNSYLVANIA RAILROAD TUNNEL EXTENSION INTO NEW YORK CITY¹

BY MR. A. J. COUNTY,

Assistant to Third Vice-President, Pennsylvania Railroad Company.

Upon your insistent invitation, it is my purpose to give an introductory address on the subject of "The Pennsylvania Railroad Tunnel Extension into New York City," and the reasons which led to its construction. I am not authorized to speak for the management, but give you my personal views, and if I cause you to more fully appreciate this undertaking, and the foresight, courage and energy of the men who planned it and the men who are constructing it, I believe I will have conformed to the unwritten law of the University as practiced in the Wharton School, "make the boys think."

It is the experience of transportation corporations as truly as of individuals that a selfish and niggardly policy brings ruin, and that permanent development can be secured, and steady and reasonable profits realized, only by exercising forethought, making judicious expenditures for the betterment of public transportation facilities, and providing for future expansion.

The Pennsylvania Railroad Company apparently followed a broad policy in studying the situation in New York City, and in undertaking the responsibility of pioneer in tunneling, for long distance and suburban railroad traffic, the North River, which separates New Jersey from that part of New York City known as the Borough of Manhattan, and the East River, which separates the latter borough from the Borough of Brooklyn and the Borough of Queens on Long Island.

Let us try to discover what must have confronted its management in this study. The lines of the Pennsylvania Railroad Company have terminated on the west bank of the Hudson River since 1871, when it leased the United New Jersey Railroad and Canal

¹An address before the Wharton School Association, University of Pennsylvania, February 13, 1907.

Company, and the same barrier of the North River lies between them and the commercial and financial metropolis of the country, hampering the development and movement of traffic.

Men have, since 1871, slightly bettered their control over nature, but only last month passengers in crossing the Hudson River, from Jersey City to Twenty-third Street, New York, usually a run of about fifteen minutes, spent between fifty and sixty minutes in fog and ice. The delay was, of course, proportionately large to other points, though the ferry boats are of the fastest and most powerful type.

When the journey has been accomplished, the people are landed only on the fringe of New York City, in the Borough of Manhattan, where the cross-town streets are narrow, and the street paralleling the wharves is filled with drays and heavy wagons, seriously impeding the movement of over 300,000 persons every day.

Again, visit Brooklyn Bridge, or any one of the many ferries of the East River on any business day, morning or evening, and see the discomfort and delay of travel experienced by the surging masses to and from the Borough of Manhattan because nature has interposed another barrier called the East River, and it is responsible for this congestion and for the comparatively isolated condition of the residents of Brooklyn, to say nothing of those residing in other parts of Long Island.

In view of the long deference of mankind to these great rivers, it may well be asked, is this traffic growing, or is its growth so slow, or unprofitable, as to warrant no other method of transportation being used than ferries, and will any progressive railroad company with lines terminating in New Jersey, be content to utilize practically the same facilities for entering and leaving New York City as existed over sixty years ago? In answer to the first question, the traffic growth is marvelous, as a recital of the facts will evidence; the action of The Pennsylvania Railroad Company is the best answer to the second query.

An examination of the situation shows that in the Borough of Manhattan, New York City, the density of population is about eight times as great as the average density of the six other largest cities of the country. The side barriers of the East and North Rivers, and the difficulty of movement between points in such a small and crowded area, may, however, be summed up in the experience that

until within the past year it took the best part of an hour to arrive at a residential section of the city, and for out-of-town places an hour is not an unusual time from the place of business to the place of residence, and generally under the most crowded conditions. Because of these barriers, and the unfavorable climatic conditions of at least six months in the year, the Borough of Manhattan, although crowded and expensive, is considered the most desirable place for residence, while the suburban section within the limits of the City of Greater New York, in the Boroughs of Brooklyn and Queens jointly, have not even the same density of population found in other cities. These unfavorable conditions have not, and doubtless will not, stop its growth, for the population included within a circle of nineteen miles inland radius from the City Hall, Manhattan, was, in 1890, three million three hundred and twenty-six thousand nine hundred and ninety-eight; in 1900, four million six hundred and twelve thousand one hundred and fifty-three; in 1905, five million four hundred and four thousand six hundred and thirty-eight. The increase in ten years was thirty-eight per cent.

In 1913 the population of this metropolitan territory will, at this rate, be at least six millions, and in 1920 will be well over eight millions, without considering the many schemes of improved transportation now under way.

Let me here illustrate the possibility for growth in the Boroughs of Brooklyn and Queens, compared with the Borough of Manhattan, and with the following cities:

	Population.	Area, Square Miles.	Density per Square Mile.
Manhattan Borough	2,174,335	21.93	99,148
Brooklyn Borough	1,404,569	77.62	18,097
Queens Borough	209,686	129.50	1,618
Boston	607,340	42.66	14,237
Chicago	2,050,000	190.5	10,761
St. Louis	750,000	61.5	12,195
Philadelphia	1,500,000	129.5	11,582
Greater Pittsburgh	450,000	37.25	12,080
Baltimore	560,000	31.5	17,777
London, England	4,542,725	118.00	38,498

It is impossible to judge the growth of a city by the increase of its transportation facilities alone. It is a well known fact that in the City of New York the various transportation companies

operating in and near that city have been unable to increase their facilities for travel in proportion to the number of passengers or tonnage carried, but there has been a notable response to every additional avenue of transportation and commerce.

In 1897, four hundred and ninety million one hundred and fifty-two thousand seven hundred and ninety passengers were carried on the elevated and surface lines in the Borough of Manhattan; in 1906, the elevated, subway and surface lines carried one billion seven million one hundred and sixty-one thousand nine hundred and thirty-three passengers, a gain of five hundred and seventeen million nine thousand one hundred and forty-three, or more than the entire number of passengers carried in the year 1897. A similar enormous increase in travel has occurred across the East River. About fifty years ago the first railroad was built in the southwestern part of Brooklyn. This village community was then about two hundred years old and had a population of between twenty-one and twenty-five thousand. Now there is a city of seventy-seven square miles, with a population of one million four hundred thousand, forming a borough of Greater New York City.

Between that borough and the Borough of Manhattan the traffic crossing the East River in 1897 numbered one hundred and forty-three millions. Of these persons about fifty millions, excluding pedestrians, were, in that year, carried over the bridge.

This traffic develops with great rapidity, for, in 1906, a close estimate shows that 295,000,000 persons were carried across the East River. The ferries conveyed about 100,000,000, and the railways on the Brooklyn and Williamsburg Bridges carried 195,000,000, and, although pedestrians tend to make the congestion greater, they are not included in the foregoing figures.

With abundance of room for expansion, and the provision of adequate transportation facilities, the Borough of Brooklyn must become the competitor of the Borough of Manhattan in population and wealth.

Leaving the subject of intra-city travel to consider that carried by the railroads across New York harbor, we find that the railroads on the west bank of the North River, in 1896, carried nearly fifty-nine million people; in 1890, over seventy-two million; in 1896, ninety-four million, and in 1906, we may safely estimate the figure to be one hundred and forty million people.

This is the passenger side only, but how are the necessities of these people provided for, and how do the commodities from the southern and western states reach them? The freight traffic carried on the lines terminating in New Jersey is, of course, laid on the bosom of Mother Nature and floated across New York harbor on the East and North Rivers, and I would say that at least eighty to one hundred million tons from the railroads are so carried every year.

Such conditions indicate that any additional transportation route must be a distinct advantage to the traveling public, and to the residents of New York City and Long Island, especially if it removed the inconvenience and delay of transfers across the East or North River, and must have had great weight in prompting the Pennsylvania Railroad Company to build the New York extension.

It must be remembered that the problem of the Pennsylvania Railroad in conveying persons and property directly into New York City is not merely a local necessity, but is largely due to the fact that its road is a great avenue of travel to and from the west and the south and that city, which is the metropolis of the country for business and pleasure. This responsibility is a gradual growth since its lease of the United New Jersey Railroad and Canal Company in 1871, when the number of passengers carried was slightly over seven million, and the tons of freight slightly over two million, whereas, during the past year, there were carried on the United Railroads of New Jersey Division twenty-three million passengers and thirty-one million tons of freight.

In this period ferry boats and ferry facilities have been enlarged, but not at the same rate as traffic, except possibly the cost of the boats and the rents of the municipal piers.

From authentic figures published in 1896, the Pennsylvania Railroad carried nearly twenty-five per cent of the passenger traffic over the North River, and out of the one hundred and forty million passengers now carried, it is safe to say that the Pennsylvania Railroad must move yearly in its ferry boats about thirty-three million people in and out of New York City, in addition to vehicles and commodities. The facilities must be so arranged as to conveniently transport them in comfort and good order during the rush hours, as well as the hours when traffic is lighter, and in the winter months, when the conditions of traffic are such as to cause considerable

delay, and the taking of extraordinary measures to insure the safety of passengers.

Across the river from the terminal at Jersey City stood the great metropolis with but one moderate sized railroad station in its center, and its citizens, fully conscious of the isolation of the city, were anxious to remedy it.

The Pennsylvania Railroad Company, in seeking improved methods of transportation to and from New York City, recognized the fact that, trusting solely to ferry facilities, it would fall short of what it believed the future would require for the greater dispatch, comfort and convenience of not thirty-three million people carried to and from the metropolis each year, but what, inside of twenty years, will mean fifty million.

The company when considering its tunnel scheme also had in mind the isolation of Long Island, and the results to be obtained by bringing it into touch by rail with the rest of the world, and accordingly acquired a controlling interest in the Long Island Railroad Company by the purchase of a majority of its capital stock. This should give it the largest part of the long distance traffic, both passenger and freight, from that island. As an estimate of what that may be, let me repeat that Brooklyn alone has a population of about one million four hundred thousand, and will, of course, grow enormously when the island is brought into direct contact by tunnel and improved freight routes with the City of New York and the west and south.

The traffic on the United Railroads of New Jersey Division of the Pennsylvania Railroad in thirty-four years had a growth of 203 per cent in passengers and 1122 per cent in tonnage. I will state this more concretely by saying that since 1895 the tonnage mileage on the main line of the United Railroads of New Jersey Division increased 104 per cent, and the passenger mileage increased 79 per cent. Its traffic density per mile of road is now 15,715,246 ton miles, and 5,210,804 passenger miles.

The passenger traffic on the Long Island Railroad also grew, within this ten-year period, over 33 1-3 per cent, and a like increase has resulted in its tonnage. The total tonnage of the United Railroads of New Jersey Division and the Long Island Railroad for the past year was thirty-three million seven hundred and twenty-three thousand sixty-one tons, and it may be estimated that the New

York and New England tonnage to be handled across New York harbor for the Pennsylvania Railroad lines is in the neighborhood of sixteen million tons per annum.

The situation, therefore, that would confront the company in the next two decades was one requiring instant attention, if it were to be squarely met on a remunerative basis. The interests of the company, as well as the demands of commerce, required liberal provision on the Long Island and New Jersey shores for the freight traffic of the entire metropolitan district, and the carriage of through freight to and from New England states, as well as the passenger extension into New York City and the establishment of a centrally located passenger station, through which inconvenience and delays would be avoided.

Various methods of accomplishing this result had at different times been considered, and at one time centered on a bridge for passenger traffic. On account of the great cost of a bridge, and because all the companies whose railroad lines terminated on the west bank of the North River would not unite in the undertaking, the bridge was eliminated from consideration for the time being. The alternative was the construction of a tunnel line; but the difficulties incident to the operation by steam of a tunnel at the depth and with the gradients required by the topographical conditions, seemed to make a tunnel almost, if not quite, impracticable.

Meanwhile, however, the successful operation of steam railroad trains in tunnels in other parts of the world by electric power indicated a satisfactory solution of the problem for suburban traffic.

I would like to impress upon your minds that this undertaking is not an experiment, or a work hastily undertaken, but one which was chosen as the best solution of the company's difficulties. It is the result of many years of deliberate thought and investigation of railroad terminals and tunnels in various parts of the world, by engineers of experience and men of executive training. Its practical features have been more than confirmed by the amount of work so far completed, and to which I will make further reference.

For many years the company realized that the project was not one that could be financed singly, but necessity eventually became so stern, and the growth of the company so great, that the improvements in engineering methods and plans for tunnels were finally regarded as absolutely certain to produce satisfactory results, and

such as to justify the company proceeding alone in its plans for the development of its own system and the movement of its traffic.

The tunnel extension has a great advantage over the proposed North River bridge, in that it provides a direct connection between the lines west of the Hudson River and the Long Island Railroad. It also connects with the proposed New York Connecting Railroad, and through it with the New York, New Haven and Hartford Railroad, furnishing an all-rail route between the Western, Southern and New England States.

To carry this tunnel scheme into effect required the formation of two companies, one in New Jersey and the other in New York, which are known as the Pennsylvania, New Jersey and New York Railroad Company and the Pennsylvania, New York and Long Island Railroad Company, respectively.

The first named company was incorporated on February 13, 1902, in the State of New Jersey, and is empowered to build a railroad from a point of connection with the tracks of the United New Jersey Railroad and Canal Company, near Newark, thence to and under Weehawken and the Hudson River to a point on the boundary line between the States of New Jersey and New York, connecting there with the railroad of the following company, organized under the laws of the State of New York.

The Pennsylvania, New York and Long Island Railroad Company was incorporated April 21, 1902, under the laws of the State of New York, and it is authorized to construct and operate a tunnel railroad in the City of New York, to be connected with any railroad within the State of New York or any adjoining state, and thereby form a continuous line for the carriage of passengers and property between points within and points without the said city. The western terminus thereof is under the waters of the Hudson River on the boundary line between the States of New York and New Jersey, at points of connection with the Pennsylvania, New Jersey and New York Railroad, opposite West Thirty-first and West Thirty-second Streets, New York City. The eastern terminus of said railroad is at points of connection with the Long Island Railroad, in the Borough of Queens in the City of New York.

Before the New York company could begin constructing its railroad, it was necessary to obtain a certificate from the State Board of Railroad Commissioners that such extension was a public

convenience and necessity, which certificate was granted November 24, 1902.

It was also necessary to obtain a franchise from the City of New York, which was granted by the Board of Rapid Transit Railroad Commissioners on October 9, 1902, accepted by the railroad company on November 5th of the same year, and approved by the Board of Aldermen on December 16, 1902.

The consents required from the other municipal departments and bodies of the city were obtained later.

The conditions under which the franchise was granted were:

That the tunnel company should maintain and operate the railroad in perpetuity, begin the construction of its road within three months after obtaining the needful municipal and other consents, and complete its construction within five years thereafter.

That the tunnel company should pay the city a compensation per lineal foot for the tunnel tracks, and a further compensation for the use, for station purposes, of the underground portions of the streets, other than Thirty-second, which was vacated and sold to the company, and which it so occupies. Such compensation is fixed for the first period of twenty-five years, and is subject to readjustment at the end of each like period. For the first period of twenty-five years it is so adjusted that the tunnel company pays double the amount per annum for the latter fifteen years thereof that it does for the first ten, and on this basis the average for the entire period will be about sixty-four thousand dollars per annum.

Pursuant to the terms of this franchise, the company is undertaking the construction of a line, starting from points under the Hudson River, on the line between the States of New York and New Jersey, and running eastwardly through and under Manhattan Borough, New York City, and under the East River and Long Island City, rising to the surface in its Sunnyside Yard terminus in that city. The terminal station between Thirty-first and Thirty-third Streets, in New York, and Seventh and Ninth Avenues, and extending westwardly to Sixth Avenue, and additional tracks under Thirty-first and Thirty-third Streets, necessary for the operation of the railway and station, are also being constructed.

The importance of the project, and the engineering questions to be solved in its construction, caused the company to create a Board of Engineers, eminent in their profession, to supervise the

preparation of all plans and have general direction of the undertaking, reporting to the executives. The work was then divided into three construction sections, the North River Division, the East River Division and the Meadows Division, and consists of about 13.10 miles of new railroad, the part in the open embracing about 7.66 miles and in tunnels about 5.5 miles.

The principal physical features of the work are elevated tracks constructed in the open from a connection with the New York Division, east of Newark, across the Meadows to the portals of the tunnels at Bergen Hill, and a double track tunnel under Bergen Hill, West Hoboken, Weehawken, becoming two single track iron tube tunnels as they pass under the Hudson River into New York City to a point near Tenth Avenue. When the tracks emerge from the tunnels at that point they begin to increase, and at the terminal station, lying between Thirty-first and Thirty-third Streets and Seventh and Eighth Avenues, will number twenty-one.

At the terminal station site there are about twenty-eight acres enclosed by retaining walls, making a total length of such walls of seventy-eight hundred feet and requiring the excavation of two million five hundred thousand cubic yards. There will be about forty-five thousand tons of steel required for the terminal station, and such station will have ultimately a maximum capacity for about fourteen hundred and fifty trains per day, accommodating about five hundred thousand passengers daily. Within the station area there will be about sixteen miles of track.

Easterly from Seventh Avenue the terminal tracks finally resolve into four tracks in two twin tunnels extending under Thirty-second and Thirty-third Streets to the East River shafts in Manhattan. From the latter point four single track iron tube tunnels extend under the East River and into Long Island, and the lines reach the open surface at the entrance to the Sunnyside train yard, where connection will be made with the Long Island Railroad, and later with the New York Connecting Railroad, to handle traffic to and from New England, as well as Long Island.

The company has been negotiating for the past year for necessary changes in the routes of streets in the Sunnyside Yard District, on Long Island, and such will doubtless be made, so that the construction of the large terminal yard may begin in this undeveloped

region. It will, with its approach tracks, cover about 389 acres, and have a capacity for about 1,500 cars.

The plans of the company, since their first inception, have been materially broadened, as the general recital of the physical features of the extension indicates, and the total cost, including real estate, will probably be not less than \$90,000,000.

It will be well to bear in mind that the tunnel project is on a much larger scale than the existing facilities, and indicates further thought for the care and dispatch of traffic. Broadly speaking, it is after all only the result of the enormous growth of the traffic of the Pennsylvania Railroad for over thirty years, demanding some such provision as is now being made for its still greater expansion. Although \$90,000,000 seems a large sum, it must be considered that six years will have elapsed between the first and the last expenditures for the work. Therefore, it can readily be seen that if it had been deferred for another decade its cost would have been almost prohibitive, but now it is within the bounds of a reasonable outlay for the results to be accomplished. As proof of this, consider the statement publicly made by a vice-president of the New York Central and Hudson River Railroad Company, that his company required \$70,000,000 for the improvement and reconstruction of its station and the electrification of its tracks for suburban traffic. It must be remembered that the New York Central and Hudson River Railroad Company is compelled to carry on its large work of improvement within the territory where its tracks are at present located, involving great responsibility because the traffic must continue to move. whereas, the Pennsylvania Railroad Company, for its \$90,000,000, makes a considerable addition to its system, has a terminal in the central part of New York City, with connection to Long Island and New England, and has a clear field to carry on its work.

By the time the real estate and rights of way had been acquired, the management had its plans and specifications prepared by the board of engineers. Contracts were then advertised, the awards made to the lowest bidder, and the active work of construction was undertaken.

The work of investigation and construction has been steadily pursued, until to-day it displays the following evidence:

The masonry work of the several bridges on the line from its connection with the New York Division near Harrison to the portals

of the tunnels at Bergen Hill is making rapid progress towards completion.

The tunnels under Bergen Hill are progressing satisfactorily, and the excavation has been made and iron tubes laid for the two tunnels under the North River, and the concrete lining is now being placed. The excavation of the east shore end of these tunnels is now within two hundred feet of the terminal site.

The excavation at the terminal site of the estimated two million five hundred thousand yards of material, between Seventh and Eighth Avenues and Thirty-first and Thirty-third Streets, is almost completed, and a large part of the foundations for the building and sub-surface work in hand.

Eastward from the terminal site to the Manhattan shafts, considerably more than one-half of the necessary excavation has been completed, and rapid progress is now being made in the excavation and construction of the four tubes under the East River to the Long Island shafts.

About seventy-five per cent of the tunnels east of that shaft has been iron lined, while the excavation is nearing completion. I can better express it by saying that, with the exception of a short distance in and near the terminal, it is possible to walk underground from Bergen Hill, N. J., to and under the East River.

The tunnel extension cannot be considered complete without the following extensive improvements for the development of Long Island and New England traffic, which are being undertaken in connection therewith:

1. The establishment of the eastern terminus to be called "Sunnyside Yard," between Thompson and Jackson Avenues, in Queens Borough, which I have before mentioned. This yard is necessary, not only for the efficient operation of the tunnel extension in Manhattan, but also for the proper care of the additional traffic which will result from the said extension, and its interchange with the Long Island Railroad and New York, New Haven and Hartford lines.

2. The elimination of grade crossing and the electrification of the Long Island Railroad within the city limits. These changes improve the lines from Flatbush Avenue station out to Brooklyn Borough line, and from Long Island City station to Jamaica, and from that station by the Manhattan Beach line through East New

York around to the Bay Ridge Terminal, on the southern shore of Long Island.

3. The Pennsylvania freight terminal yard and piers at Greenville, N. J., connecting by the proposed straight and relatively short ferry across the upper bay with the Bay Ridge terminal of the Long Island Railroad.

4. The enlargement of the facilities for handling freight in the Boroughs of Brooklyn and Queens, by the establishment of many yards, which are necessitated by putting these boroughs in touch with the rest of the country by rail and for their local requirements.

5. The completion of what is known as the "Atlantic Avenue Improvement," in Brooklyn, requires the removal of steam railroad tracks from the surface of that avenue, at the joint expense of the railroad company and the city, and a large and very expensive improvement, at the sole cost of the railroad company, of the passenger and freight stations at Flatbush Avenue. This point will in the future probably be the most important distribution point for passengers in Brooklyn, the improved station and terminal being designed to occupy sixty-one lots. When the New York Connecting Railroad is finished, residents of Brooklyn and Queens will travel by that route to New England and the north and east, and by way of the Pennsylvania terminal in New York City to the west and south.

6. The New York Connecting Railroad is to be twelve miles long, to run through a part of Queens Borough, then by a bridge across the East River at Ward's and Randall's Islands, and will be the connecting link for passenger and freight traffic to the territory mentioned in the previous paragraph. It will abolish the largest part of the floatage in New York harbor now carried on by the Pennsylvania Railroad Company by delivering and receiving freight at Bay Ridge, L. I., and will carry all the passenger traffic through the Pennsylvania Railroad tunnels.

7. Construction of the Glendale cut-off between the main line, Montauk Division and Rockaway Beach Division of the Long Island Railroad. This is necessary for the improved passenger service and to give direct connection with the Pennsylvania tunnels through New York City.

8. New piers and docks on Newtown Creek at its confluence

with the East River for traffic to and from the Long Island Railroad.

9. Electrification of the United Railroads of New Jersey Division from Newark into Jersey City, for local passenger traffic.

In all of these plans the residents of the City of Greater New York and its public bodies are materially interested, and it is largely due to this public sentiment that the company has been successful in having them approved.

The accompanying map will enable you to clearly comprehend the vast improvements contemplated and their tremendous possibilities to the Pennsylvania Railroad system, the City of Greater New York, and, in fact, the entire country.

Summing up, the Pennsylvania Railroad Company's New York Tunnel Extension is a line of railroad from Newark, N. J., to Port Morris, N. Y., through the Borough of Manhattan and Queens, having for its principal purposes:

The construction of a large passenger terminal centrally located in the City of New York;

Making the Long Island Railroad an integral part of the system;

Affording the Boroughs of Brooklyn, Queens and the balance of Long Island abundant opportunity for development; and

Binding the New England States with those of the west and south by means of the New York Connecting Railroad.

The reasons for its construction apparently were:

First—To provide for the future by enlarging the present facilities for freight and passenger traffic, because of the continuous growth in passenger and freight traffic, and to accomplish it before the cost became almost prohibitive, or the task impossible, because of the construction of other underground transportation lines.

Second—To run its passenger trains into a central location in the City of New York, instead of a station on the west bank of the Hudson River.

Third—To open to the people in the thickly populated Borough of Manhattan the residential sections of Long Island, and to offer to Newark and other populous towns in New Jersey direct and quick access to the resorts on Long Island beaches.

Fourth—To provide a highway for all-rail traffic to New England.

Fifth—To give the Boroughs of Brooklyn and Queens, with their population of over 1,500,000, direct railroad connection to and from the New England, Southern and Western States, and to supply freight facilities with similar connections in these boroughs, thereby properly serving the entire area of Greater New York through freight stations, suitably located to develop its commercial interests.

Sixth—To provide additional freight facilities and shorten the water transportation trip for the New England traffic across New York harbor from about twelve miles to three and four-tenths miles.

Seventh—To make its Long Island Railroad investment remunerative within a comparatively short period.

Eighth—To obtain a proper share of the golden future by judicious expenditures in a territory having abundant promise, whether viewed from the growth of traffic in the past or the outlook for the future.

THE POOLING OF FREIGHT CARS

By J. R. CAVANAGH,

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The inability of many of the railroads of the country, or portions of numerous other railroad systems, to handle promptly the freight offered for transportation has increased the importance of devising some method of adding to the efficiency of the enormous freight car equipment now in use upon American railways. There is no topic in railway management more discussed than the car shortage or car surplus question.

This is a comparatively recent problem that has arisen as the result primarily of the enormous increase in traffic during the past seven years, and secondarily of the steady development of through shipments or long-distance traffic. The development of the country, the widely distributed population and industry, and the growing unification of the transportation business of the country as a whole are causing the former method of interchanging cars to become antiquated and practically unworkable.

Prior to 1872 connecting railway companies did not exchange freight cars regularly except in the case of cars that were assigned to freight lines and which were marked and known as "line cars." The payment for the use of cars that were interchanged was made by junction agents at the rate of two cents per loaded mile run. In 1872 this charge was reduced to one cent per mile run, loaded or empty, settlement being made by the accounting department of the company borrowing the car by a report made to the corresponding department of the company owning the car. In August, 1876, the payment per mile run was reduced to three-quarters of a cent, and later a further reduction to three-fifths of a cent was made, the charge in each case being for the entire distance traveled by the car, whether loaded or empty.

This system of payment upon the basis of mileage proved fairly satisfactory during the prosperous years preceding 1893. Then

when the panic came which was followed by a period of five years of business depression, the railroads of the country were troubled with a surplus rather than with a shortage of equipment. Many roads were glad to have their equipment used by other companies. During the period from 1893 to 1899 there was comparatively little increase in the freight car equipment, and the consequence was that when business became active, just before 1900, every railroad soon began to clamor for cars. The situation which began to develop in 1899-1900 has grown steadily more acute year by year, until at the present time every railroad company is obliged to confess itself unable to supply the shippers promptly and adequately with a sufficient number of cars.

Various efforts have been made to deal with this steadily increasing difficulty and perplexity. As a result of an agitation in 1901 the railroads of the United States on the 1st of July, 1902, changed the basis of settlement for the use of foreign cars from miles run to a per diem basis. The payment agreed upon was twenty cents per day, the owner of the car having the right to demand its return when the car had been absent from its lines twenty days. If the car was not returned within ten days thereafter, viz., thirty days from the time it left the line of the owning company, the per diem charge was advanced from twenty cents to one dollar. It was hoped that this change in the payment for the use of foreign cars would solve the question. It did, indeed, prove to be much superior to the mileage basis of payment, and experience has shown that time is a better standard than mileage in fixing the charges for the rental of cars.

A fundamental defect in the per diem penalty plan of charging for the use of foreign cars is becoming evident: it has had the effect of pooling cars moving in the direction of roads receiving large volumes of inbound business, and of taking equipment away from the lines of roads having a large outbound traffic. Thus, for instance, road A. might deliver 1,000 cars to road B. in a month, while during the same time road B. would have only 600 carloads of freight for delivery to A. If under these conditions B. had an unusual demand for cars, it would retain the 400 cars thus received in excess of those given it and use the same to carry on its business with other companies, viz., to supply its own equipment needs. The method of paying for the use of foreign cars does not insure a

prompt return to road A. of the equipment sent out by it in excess of the equipment received in the transportation of traffic coming to it from connecting lines. Railroad companies that are large originators of traffic are easily denuded of equipment, and are without the power under the present rules to get their cars back within a reasonable time.

As the demand for cars has increased, as storage facilities have become inadequate with the growth of traffic, and as the average number of miles which a carload of freight is moved has grown greatly, the per diem of twenty cents has come to be entirely inadequate. This fact was so clearly recognized by railroads that on the 1st of January, 1906, the per diem was raised to twenty-five cents per car, with a per diem penalty of seventy-five cents additional at the end of thirty days. This increase was soon shown to be insufficient, and the result was that in the autumn of 1906 a number of railroads agreed among themselves to charge each other, temporarily, a per diem of fifty cents, without the penalty feature. The roads which did not become parties to this agreement have continued to charge the old rates of twenty-five cents per day, increasing to one dollar per day to the end of thirty days.

Even the per diem charge of fifty cents has not met the situation. There is still a severe car shortage, and it will be impossible for the railroads to secure from the car builders a sufficient number of cars during the present calendar year to relieve the situation. At the close of January, 1907, a number of railroads agreed to enter a freight car pool, provided a satisfactory plan for regulating such a pool could be worked out. Thus far no practical plan has yet been presented. Everybody seems to recognize that the per diem system of payment ought to be changed, but the problem of working out a car pooling arrangement that is satisfactory to all parties in interest has thus far proven impossible of solution.

One thing, however, is certain: the rules that have been recommended providing for the return of cars as per marks or ownership are impracticable, for the reasons that every restriction placed upon the movement of a car reduces its availability, increases the mileage which it travels without a load, and adds to the time and expense required for switching. Some plan must be found for controlling the movement of freight cars before traffic officials can hope to discover a practical solution of the problem.

In order to deal adequately with the distribution and movement of cars a system must be established that will be in accordance with the following principles:

1. Equity must be secured alike to owner and user of the car, viz., to both delivering and receiving lines.
2. The payment must reward the efficient use of equipment and adequately penalize its inefficient use.
3. The reward should be in proportion to the degree of merit, and the penalty should correspond with the degree of the offense.
4. The system of control should minimize operating expenses as far as possible, and should provide definitely for settlements day by day or week by week between the delivering and receiving lines.
5. No unadjusted discrepancies between car owner and user should be permitted.
6. The system should insure to each road the full use of its own equipment, or of cars providing an equivalent equipment.
7. The system should provide for maximum loads, and should minimize as far as possible the empty-haul mileage.

In the opinion of the writer these principles of car control and distribution can be carried out in practice only by a system of pooling freight cars in accordance with an equitable arrangement that will prevent the appropriation by any one or more lines of the larger and better cars, and that will provide for a daily settlement between delivering and receiving lines. This system would minimize the expenses of operation and maximize the efficiency of the equipment. As the result of a careful study of the subject and of business experience, the author recommends the following plan for the organization and management of a freight car pool. He believes that it solves every element of the problem, and that its adoption by the railroads generally in the United States would enormously increase the efficiency of their freight equipment.

SUGGESTED PLAN.

1. An inventory to be taken of every car on each line, home and foreign, at 12.01 a. m., date of beginning of plan.
2. A statement of equipment owned at 12.01 a. m., date of operation.
3. The difference between ownership and actual cars on hand to constitute a debit or credit, as the case may be.
4. Each day at 12.01 a. m., a report to be rendered, in triplicate, by each agent, of cars delivered to connecting lines, to the agent of such line, for the

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twenty-four hours preceding; such reports to be checked and verified by both agents (or preferably by a joint clerk) one copy to be kept by the receiving agent, two copies to be returned to the delivering agent, one for his file and one to be forwarded, with notations thereon, to the district manager of the pool. The receiving agent to be required to take an impression copy and send the original to his car accountant.

5. In case of omissions, errors or discrepancy in statements, such discrepancies to be adjusted within twenty-four hours, the delivering line, in the meantime, assuming the expense of car hire until it proves delivery; if not adjusted in ninety-six hours then the inspector of the pool to investigate, and his report must be accepted by both lines, subject to appeal to the district manager.

In all cases of dispute, when finally decided, all errors and omissions to be adjusted on current interchange report, which report shall show dates, initials and car numbers "as reported" and "as should have been reported," also difference "Dr." or "Cr."

6. In cases where such discrepancies become chronic, the pool to place a joint man to locate the responsibility; the expense of such joint man to be paid by the road at fault.

7. The balance Dr. or Cr. to be carried forward each day; the cars delivered the current day added, the cars received deducted, and balance Dr. or Cr. shown and certified to. Not later than the 5th of each month a summary of the past month to be rendered by the agent of the delivering line to the agent of the receiving line, showing, by date, the daily balances, which must be certified to at once.

8. The Dr. balance to be paid for at such flat rates as may be agreed upon, or may be based on some sort of a graduated plan about as follows:

First fifteen days at	25	cents	per	car	per	day.
The sixteenth day at	30	"	"	"	"	"
The seventeenth day at	35	"	"	"	"	"
The eighteenth day at	40	"	"	"	"	"
The nineteenth day at	45	"	"	"	"	"
The twentieth day at	50	"	"	"	"	"
The twenty-first day at	55	"	"	"	"	"
The twenty-second day at	60	"	"	"	"	"
The twenty-third day at	65	"	"	"	"	"
The twenty-fourth day at	70	"	"	"	"	"
The twenty-fifth day at	75	"	"	"	"	"
The twenty-sixth day at	80	"	"	"	"	"
The twenty-seventh day at	85	"	"	"	"	"
The twenty-eighth day at	90	"	"	"	"	"
The twenty-ninth day at	95	"	"	"	"	"
The thirtieth day at \$1 per car per day; and thereafter at \$1 per car per day.						

The holding of any individual car in excess of 60 days to be charged for at agreed rate per car per day, in addition to the exchange balance rates, as may be agreed on. Another plan that suggests itself is, in addition to a flat rate for Dr. balance each day to have an arbitrary percentage of all revenues received from freight, switching, car service, etc., deducted and Cr. to pool—to be divided pro rata on equitable basis, or used to maintain full quota of cars in pool.

9. All cars to be repaired on the line where cars are in bad order, under rules to be agreed upon by the M. C. B. of lines in the pool.

10. Cars accepted in bad order to be transferred at expense of delivering line.

11. In cases of cars destroyed, such destruction of car to be reported by wire or United States mail; from date of such notice the road destroying the car to be entitled to a claim of not to exceed 60 days for re-building the car, or thirty days to pay for the same; if payment is made then the commissioner or manager shall credit such road and debit the car owner.

12. In cases of new cars built, such cars, when traveling under freight charges, shall not be counted in exchange account and shall be shown on interchange report as "new cars" and credit shown thereon; when such cars are delivered to connecting road for service, then such road shall be debited with such cars, and owners credited. (Cars returned under M. C. B. route cards to be credited same as good-order cars.)

13. When a road cannot receive traffic on account of congestion, embargo, or other causes, it must protect itself by stopping receipt or loading for such line until interchange is resumed, or it may be arranged between such lines to hold such traffic and bill on line requesting cars held. (Make it a matter of local arrangement and in no way interfere with exchange account.)

14. In the case of cars in switching service, the roads in interest to arrange to bill each other for such cars for the actual time such cars are in the service of the carrier line, plus one day for switching and one day for the return of car.

THE ELECTRIFICATION OF AMERICAN RAILROADS

BY THOMAS CONWAY, JR.,

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The most important problems confronting railway officials at the present time are the reduction of the costs of operation and the increase in the efficiency of the service. No undertaking is too vast and no expenditure too great if it can be shown that the results secured will increase the profits of the system. On every hand grades are being reduced, curves and grade crossings eliminated and cut-offs constructed in order that the cost of operation may be decreased. The methods by which traffic may be increased and the cost of its movement diminished are being carefully studied by railroad managers. Under such conditions it is little to be wondered at that the possibilities of using electric power upon our railroads should receive careful attention.

Electricity as a motive power in transportation work was introduced little more than a decade ago. The substitution of the new power for the cable line and the horse car upon our city streets entirely revolutionized urban transportation conditions. Not only did it make the schedule much more rapid, but it made possible the introduction of larger cars and a general improvement of the system which was impossible with the former methods of propulsion. So successful was electric power for street railway work that within a very few years a network of lines was constructed extending from the large centers into the country in all directions. The development of these large interurban systems which for mechanical perfection and excellence of equipment and service rival the older steam railroads clearly demonstrated that electricity had reached the point where it was a formidable rival of the steam locomotive. It had demonstrated its ability to give satisfactory service under the most trying conditions and had made profitable the operation of lines which could not have escaped insolvency had they used the older form of power.

The steam railroads began to investigate closely the possibilities

which seemed to be open to them. The New York, New Haven and Hartford was the first road to adopt electricity for railroad work. Its traffic situation is rather peculiar. Extending through a densely populated country and having a passenger traffic out of all proportion to the average for the United States, the road approaches more closely to the interurban, in the similarity of its traffic conditions, than any other system in the country. Large sections of this line immediately contiguous to populous centers have been equipped to utilize electric power, and there is in operation upon this system an electric passenger service which is unsurpassed. The most recent converts to electric power have been the New York Central and the Pennsylvania Railroads. The former is expending seventy million dollars in electrifying that portion of its system immediately contiguous to New York City, upon which there is such a dense suburban traffic, while the Pennsylvania has completed and put into operation a third-rail electric line from Camden to Atlantic City, and is making rapid strides toward the electrification of the eastern end of the Long Island Railroad, which will play an important part in the New York terminal improvements now under construction. To the layman, therefore, the time does not seem far distant when electricity will displace steam as a motive power. The dirty, noisy steam locomotive will, it appears, be speedily relegated to the place occupied by historical relics.

The substitution of electricity for steam as a motive power will be made, not because of mere sentimental reasons, but because it has been sanctioned and approved by engineers and financiers after exhaustive investigation and inquiry. The change entails an enormous expense, requiring the issue of large amounts of new capital, which will result in a reduction in dividends or may even seriously impair the security of existing bonds if the new form of propulsion does not bring about a material increase in earnings or a decided decrease in the expense of operation.

There were on June 30, 1905, 48,357 locomotives in active service in the country. There are no accurate statistics showing the cost of this equipment. At the present time a freight or passenger locomotive costs about \$15,000. If we take into consideration, however, that a considerable portion of the equipment consists of shifting engines and other units of smaller size and of lower cost, it seems fair to conclude that it would cost in the neighborhood of \$12,000

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per locomotive to duplicate the equipment now in service. At this figure the American railroads have invested \$580,284,000 in steam locomotives which would sooner or later be rendered useless if the change was made.

It is to be presumed, however, that the conversion would occur gradually. The steam locomotives as they wear out would be replaced by electric equipment, the cost of which would be taken out of the earnings of the property in the same manner as has been universally followed in the past. Under such conditions, therefore, it is fair to assume that, since an electric locomotive of the same tractive power and speed can be purchased for approximately the same amount now charged for a steam locomotive, the railroads would be able in a few years to convert their equipment without increasing the fixed charges on their properties. An examination of the annual reports of a number of the largest railroads indicates that about one-twentieth of the locomotives are renewed each year. It is likely, therefore, that the change of power could be made without an increase in the capitalization of the company in all cases except where the initial substitution of electricity is on a large scale as compared with the total rolling stock equipment of the railroad making the change.

It is claimed for the electric locomotive that it is much more effective and capable of more continuous use than the steam locomotive. The report of the Interstate Commerce Commission for 1904 shows that the average effective train mileage, not including work trains, pushers or shifting mileage, was fifty-eight miles per locomotive per day. If an allowance is made for the items which were not included and for the use of double-headers and pushers where heavy grades are encountered, it seems fair to assume that the average daily run of a locomotive in the United States is about eighty miles. This figure, however, is a rough approximation. The performance of a passenger locomotive in long distance work will vary from ninety to nearly two hundred miles a day, and upon some lines high-speed engines will make as much as three hundred miles in twenty-four hours. The effectiveness of the locomotive is, however, much less pronounced in the other classes of service.

The recent investigations of the Interstate Commerce Commission have brought out the fact that the average locomotive is actually on the road not more than six hours in each twenty-four

hour period. The remainder of the life of the locomotive is spent in yards and terminals, in making up trains, or awaiting an opportunity to take its place upon the main line. Almost one-third of each day is spent in the roundhouse, in order that the many small repairs which are constantly necessary can be made. The cleaning of boiler tubes, the inspection of the many bearings and journals and the adjustment of the complicated and delicate mechanism entail a heavy expense and occupy a large amount of time. The electric locomotive is very much more simple. It has the advantage of being capable of exerting its maximum tractive power upon very short notice. It is not necessary to occupy a large amount of time in firing up, and the repairs which must be made require less time and seem to be less expensive. It is urged, therefore, that the same number of electric locomotives will be much more effective than are those now in service.

There is little data available upon which to compare the relative cost of maintenance of electric and steam equipment. In 1904 the average expenditure for repairs per locomotive mile upon the steam equipment was 8.1 cents. The amounts spent by the leading lines using electric power are as follows: Manhattan Railway, 5 cents (estimated); New York Subway lines, 7 cents (estimated); Wilkes-Barre and Hazleton Railroad, 3.8 cents (actual); Lackawanna and Wyoming Valley Railroad, 8.4 cents (actual); the Niagara, Buffalo and Lockport Railroad, 7.9 cents (actual).

These comparisons, however, are not sufficient to warrant any general conclusions. In no case is it possible to secure a record of the performance of an electric locomotive as separated from the cost of repairing motors placed upon the trucks of passenger cars in the manner usually followed upon elevated, subway and interurban lines. The advocates of electric traction claim that it is possible to maintain an electric locomotive at a cost not exceeding 5½ cents per mile run. When we consider, however, that they are basing their estimates upon the cost of maintaining equipment which is practically new and which consequently requires little or no attention, it seems advisable to conclude that the reduction in the maintenance cost of the new form of the equipment is not likely to play any important part in decreasing the cost of operation.

The production and transmission of power necessitates large and important expenditures. In addition to the cost of the power-

house, which will vary with the volume of traffic and the character of the country, it is necessary to install a complete system of power distribution. The method which seems to be more generally favored is the third-rail system, using an alternating current with a voltage upon the rail ranging from 5,500 to 11,000 volts and with a feed-wire potential in the neighborhood of 60,000 volts. The cost of such a system varies greatly. Not only does the amount of copper depend directly upon the severity of the demand which is placed upon the distributing system, but the great difference in the standards of overhead work makes very difficult any accurate estimate of the amount of money which would be necessary to electrify the railroads.

If a type of overhead construction similar to that which has been adopted by the New York, New Haven and Hartford and the New York Central is taken as a standard, there is little difference between the cost of an overhead trolley line and the third-rail system. A line equipped with No. 0000 wire, with the type of insulator necessary to handle 11,000 volts, supported by steel cables and suspended from substantial steel bridges, set in concrete, spanning the tracks is fully as great as third-rail construction where steel poles are used to carry the feed wires. The cost of such work is approximately \$10,300 per mile where two tracks are to be equipped, while for single track work, using steel poles and brackets and catenary support, the cost, at the present time, closely approximates \$4,800 per mile. Of the 216,974 miles of railroads in operation in the United States in 1905 approximately four per cent is double track, including the yards and sidings for single-track lines. Upon this basis the average cost of overhead steel construction of the type considered would, therefore, average approximately \$5,000 per mile of track, entailing a total expenditure for the equipment of the mileage now in existence of \$1,084,870,000. In addition to this, it would be necessary to expend about \$500 per mile of track for bonding, which would add \$108,487,000 to the capital account of our railroads.

It is improbable, however, that such an expensive system of power distribution would be generally adopted. The average railroad would content itself with the use of wooden poles and a construction very similar to that followed upon the best interurban roads. It is very unlikely, however, judging from interurban ex-

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perience, that it would be possible for a railroad to install a satisfactory system of overhead work at a cost of less than \$4,000 per mile.

The weakness in a system of electric traction at the present time is not in the apparatus for the generation of power, nor in the electric locomotive, but is to be found in the power distributing system. The American types of dynamos and motors are so efficient that further improvements will have but little effect upon the cost of operation. The loss of power and energy occurs between the bus-bar on the switchboard and the motor. Even under the most favorable conditions it is necessary to develop about 1 2-3 horse power in order to secure a horse power at the motor.

It is obvious that under such conditions the electric motor is badly handicapped. The steam engine is a direct connected machine, applying the power generated to the drivers with little or no waste. The loss of energy which occurs in the distributing system upon the electric line must, therefore, be overcome by the more effective method of power production which is possible in a plant where large condensing engines can be employed and where it is possible to use a type of boiler which will extract a greater amount of energy from a given weight of coal. The relative inefficiency of the locomotive comes about because of the necessity of using a high-pressure engine and a boiler which is relatively simple, since it must stand hard usage and rough treatment. There are no figures accessible showing the cost of power per horse power upon a locomotive. It is only possible to make a comparison by figuring the cost of moving the tonnage annually hauled by railroads and the approximate weight of the passengers and equipment which are handled under the two systems of propulsion.

Mr. Louis B. Stillwell and Mr. Henry Sinclair Putnam, in a paper read before the meeting of the American Institute of Electrical Engineers, held in New York in January of this year, submitted an elaborate calculation intended to ascertain the relative cost of electric and steam power for railroad work. According to their estimate, it would be possible to effect a very material saving in the cost of operation by using electric power. "If all the railroads of the United States were to-day operated by electricity, using the single phase alternating current system at the potential adopted for the equipment of the New York, New Haven and Hartford

Railroad, the energy required for operation being developed by power plants such as are to-day in extensive use and transmitted at potentials well within the limits established in practical service, and if the rolling stock equipment consisted of locomotives and multiple unit trains fitted with motors and control apparatus, no better than the best which now exist, the aggregate cost of operation, which in 1905 amounted in round numbers to \$1,400,000,000, would be reduced by about \$250,000,000."

"In 1905 the average gross earnings of our railroads per mile of line were \$9,598, and the average operating expenses \$6,409. The foregoing calculation leads to the conclusion that high class electric equipment would reduce this average cost to \$5,265. The difference is \$1,144 per mile of line, against which apparent saving must be charged the annual interest and depreciation of the power plant, the addition to permanent way equipment comprising overhead construction and track bounding, and the transmission circuits and the sub-stations with their equipment."

These conclusions were endorsed, in the main, by Mr. W. S. Murry, chief electrical engineer of the New York, New Haven and Hartford, and by the experts of the Westinghouse-Church-Kerr Company, and the General Electric Company. It seems fair to assume, therefore, that they are reasonably accurate. With this data as a starting point, the decision of the question as to whether or not the substitution of power will be profitable under present-day conditions is an accounting proposition. In order to operate the present service it will be necessary to have a chain of power plants capable of delivering a maximum output of about 2,800,000 kilowatts which would cost approximately \$400,000,000. If we add to this \$1,084,870,000 as the cost of the distributing system, \$108,487,000 for the expense of bonding tracks, and \$220,000,000 for sub-stations, rearranging telegraph lines and special work in yards and terminals, we find that the change in power, exclusive of the cost of locomotives, which we will assume is gradually provided out of earnings, involves an expenditure of \$1,813,357,000. If we allow the usual ten per cent rate of depreciation which has been found necessary in the case of the best interurban roads, it will be seen that the annual cost of maintenance of these items will be \$181,335,700, while the saving effected by electrical traction will be only \$250,000,000. The saving in the cost of operation, therefore,

because of the introduction of electric power would be \$68,665,000. In order to effect this saving it will be necessary to make an investment of between \$1,800,000,000 and \$2,000,000,000. If the railroads secure this money by issuing four per cent bonds, which is about the lowest rate that it could be obtained for, even under the most favorable conditions, the annual interest charge would be between \$72,000,000 and \$80,000,000. If these calculations are correct the transformation of power would involve an increase in the total expenditure of between \$8,000,000 and \$12,000,000 per year. When we consider, moreover, that these results are based upon a period when the railroads are congested with traffic and when conditions prevail on every hand which are most favorable to demonstrating the economies of electric traction, it is easy to understand why railroad officials regard the results of electric operation as being extremely problematical. The effects of a decrease in the tonnage in lean years could be offset much less readily with the new form of power. Interest charges and depreciation would go on unchanged, while the cost of power production per kilowatt would steadily increase with the shrinkage in the amount consumed. The experience of the interurbans demonstrates that while the cost of operation per car-mile rapidly decreases with a growth in the business, yet the possibilities of cutting down expenses in periods of declining traffic are very limited. Electricity is pre-eminently the power upon lines where great traffic density prevails, but it compares poorly with steam where traffic is light and trains infrequent.

At the present time, therefore, it seems highly unlikely that electric power will be used except under special conditions and where the traffic is heavy. Most of our railroads are even yet in a half-developed condition. It will be years before they will be able to show a traffic sufficiently dense to warrant the expenditure which is entailed in the installation of electric power. The success of the New York, New Haven and Hartford and of the New York Central, and the adoption of the third-rail system by the Pennsylvania for its Long Island service, marks the beginning of the use of electricity as a motive power upon lines where the passenger traffic constitutes a very important item. The operation of a large number of trains in small units is much less expensive with electricity than with steam, and in addition the provision of clean, attractive and quick service stimulates traffic to such a degree as to materially

affect the earnings of the property. As the short distance passenger work increases we may expect to see a gradual substitution of electricity for steam upon the sections of our railroads contiguous to the large cities and towns.

Electricity will also play an important part upon the mountain divisions of our large systems. It is upon these stretches of track that we have the coincidence of water power and sharp grades. The production of the current in such sections can be carried on at a minimum expense. The electric locomotive possesses an immense advantage over the steam engine where a high maximum tractive work for a limited time is demanded. It is possible to force a locomotive far beyond its rated power for a few minutes, but the boiler soon falls behind the demands which are made upon it, with the result that we have a reaction rendering the machine even less effective than it would be under normal conditions. An electric locomotive not only exerts its maximum power within a few seconds of the time it is put in operation, but it can be forced above its normal rate for long periods of time without materially affecting its performance. Experiments have shown that it is possible for an electric locomotive to go from twenty-five to fifty per cent above the rating, and in cases where the strain is only for a few minutes it has been possible to get out of them one hundred per cent more power than they were calculated to produce. When we compare these results with the possibilities of forcing steam operated machines and when we consider the extreme cheapness of power upon mountain divisions, we can readily understand why it is that so many of the large systems are taking steps to electrify these troublesome stretches of their roads. Electricity as a motive power has made very important strides, and has demonstrated its superiority where unusual conditions exist and where great density of traffic is encountered. The universal adoption of electricity, however, is a long way off. Not until a better system of power transmission has been devised or the traffic of our railroads has become much denser can we hope to see it generally adopted.

PUBLIC REGULATION OF STREET RAILWAY TRANSPORTATION

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The General Problem and Methods.—Street railway transportation being a monopoly service, its regulation involves the public control of a monopoly. The fact has for some time been generally accepted that no effective regulation of street railway fares or service can be accomplished either by chartering many rival companies within the same municipal area or by enacting stringent laws against the consolidation of the several lines into a single system. Indeed, the service can be much better performed, and at a lower cost, by the large company than by numerous small ones. Consolidation makes possible a more systematic extension of the tracks, and an earlier adoption of technical improvements; but the unification of the control of the service, although it results in a more economical and efficient service, so strengthens the power of monopoly possessed by the corporations performing the service that effective public regulation is demanded.

Public control can be accomplished either by public ownership, or by the regulation of the corporations entrusted with the performance of the service. Both methods have been adopted, and each has proven successful. The determination of which is the better plan for a particular community to adopt is mainly a question of expediency, whose solution depends on the administrative ability of the local government, and upon the traditional attitude of the people toward the government. As with the question of state ownership of railroads, so with the problem of public ownership of street railways, the same solution may not be wise for all countries or for all periods of time.

The American System of Regulation.—In the United States the street railways are owned and operated by corporations chartered by the states from which the companies receive charters

imposing such conditions upon the companies as the states may deem wise at the time the grant is made. After receiving the charter from the state the corporation must secure from the city in which the lines are to be located a franchise giving permission to construct the proposed railway, and the city has the right to stipulate the conditions under which the corporation may use the streets for laying tracks and operating its cars.

American states and cities place fewer restrictions than European countries do upon the powers of street railway companies. At the beginning of street railway construction, the practice of the states was to grant franchises in perpetuity; and such, indeed, is the policy of many states at the present time, but there are some states which now restrict the duration of the franchises to a limited period of twenty to fifty years.

The power to regulate fares and to make stipulations as to the frequency of the service, the paving and repair of the streets occupied, the removal of snow, and to supervise other details of management is possessed by the cities and towns, and recently the tendency of the cities has been to exercise their power to regulate the street railway service with more detail than was formerly customary.

With the rapid growth of cities and of suburban and rural population, and with the use of electric traction, the profits of the street railway business have increased so greatly as to enable the corporations performing the service to pay the public more for the privileges received from the state and city. Moreover, with the development of great cities, with the more vital dependence of the public upon street railway transportation, and with the consolidation of the street railway lines in our large cities, and in the more populous country districts, so that single corporations frequently control hundreds of miles of tracks, the necessity for careful government regulation of street and electric railways becomes increasingly necessary. The question is not whether there should be public regulation of the street railways, but how the public should exercise its control.

Street Railway Regulation in Massachusetts.—The methods and tendencies of public regulation of street railways in the United States may be illustrated by referring to Massachusetts, New York City and Chicago. In Massachusetts the law provides that the street railway companies chartered by the state shall secure the

streets for the location of their lines "with such restrictions as in the judgment of the selectmen or the aldermen the public interests may require." The terms and conditions under which street railways may be built are thus under the complete control of the local government boards. The state in the past has usually granted the franchises in perpetuity, but the city and town governments may at any time revoke the right and concessions that have been allowed, if the companies give adequate reason for such revocation by failing to observe their obligations to the public. Although this power to revoke a franchise has not been exercised frequently, the possession of the power has doubtless enabled the towns to secure better terms when negotiating with street railway companies.

The State Board of Railroad Commissioners of Massachusetts has supervision over both railroads and street railways. The commission's approval of the location of a proposed street railway must be secured before the line may be constructed. The commission regulates the amount of stocks and bonds the company may issue, and its consent must be secured to the terms of a lease, sale or consolidation. It also has supervision over the fares and the service of street railways, with power to make investigations and to recommend such regulative legislation as may be deemed necessary. The over-capitalization characteristic of street railway companies in many states has been prevented in Massachusetts.

The careful foresight exercised by Massachusetts in the regulation of street railways is exemplified in the policy of public control adopted in the construction and management of the Boston subways. The city of Boston, acting through the Rapid Transit Commission, has constructed the two subways now in operation, and is building a third tunnel. Before the first tunnel was completed it was leased to the Boston Elevated Railway Company for twenty years from the completion of the line at an annual rental amounting to four and seven-eighths per cent of the cost of construction. This rental will enable the city of Boston to meet the interest on the cost of the subway and to pay off the debt in thirty-seven years. The second—the East Boston tunnel—was opened at the close of 1904, and is leased to the Boston Elevated Railway Company until 1922 for an annual rental equaling four and one-half per cent of the cost. The public has control over the fares on all street railways lines, including the subways and elevated roads.

Public Regulation in New York.—In accordance with general practice in the United States, the street railway companies in New York must be incorporated under general law. The charters are subject to repeal and amendment at any time. The companies thus incorporated must secure the consent of the cities in which their lines are to be located, and also of the owners of one-half of the value of the abutting property (unless it should prove to be impossible to secure the consent of the property owners, in which case the court may appoint a commission to appraise the damages that may result to private property) before construction can be commenced. Local authorities have the right to make as a condition of the grant of a franchise the annual payment of an amount not exceeding three per cent of the gross earnings. The fare for a continuous ride is limited to five cents, and the legislature has definitely reserved the right to regulate the fare at any time.

The regulation of street railway transportation in New York City has from time to time been dealt with by the legislature. Since 1884 cities of 1,200,000 population in New York State have been authorized to require of a street railway company taking out a charter five per cent per annum of its gross receipts. Under the charter of Greater New York in 1897, that city is prohibited from granting a street railway franchise for a longer period than twenty-five years (with privilege of renewal for a second period of twenty-five years), and the city is required to invite bids for the franchise and to grant the franchise to the responsible company offering to give the city the largest share of the gross receipts from traffic. It was, however, found necessary for the state to supplement this provision of the charter by a special act allowing New York City to grant a franchise for fifty years to the company constructing and operating the subway recently completed. But it is not probable that it will be necessary to make exceptions in the case of such subways as may be constructed in the future.

The experience of New York City in dealing with the street railway companies on the principle of granting franchises for a limited period and selling them to the highest responsible bidder has been satisfactory, and the city is in a position to derive much more revenue from its street railway companies than it could secure under the system that formerly prevailed. Whether the plan of disposing of street railway franchises at auction will prove highly

successful is, however, doubtful, because of the difficulty of securing competitive bids for the privilege of constructing street railway lines in a city where one company controls the entire surface and elevated system of lines. Under these conditions, when the franchise is put up for auction, the city is practically obliged to deal with one corporation, and is forced to make as good terms as possible with a single company. If the public authorities are intelligent regarding the value of the franchise to be disposed of, and are zealous in protecting the public interests, it is possible for the city under the present plan, even without competition, to secure a good price for the franchise; but in this case, as in all questions of municipal government, success depends upon the intelligence and honesty of public officials.

The City of New York has secured an excellent subway under conditions relatively favorable to the public. As time goes on experience will show that the terms granted by the city to the Interborough Rapid Transit Company were unnecessarily liberal, but it is probable the terms were as good as could be obtained at the time they were decided upon. The act of 1891 for the construction of the subway stipulated that the work should be carried out with private capital, but nothing was accomplished under this act, and in 1894 the city decided upon municipal construction and private operation of the subway. After this plan had been favorably voted upon by the people of the City of New York, it was still uncertain whether private capital could be found to construct the subway with the use of public funds, and to assume the obligations imposed by law for the repayment of the money advanced by the city. Finally a contractor was found willing to assume this obligation on the condition of a fifty years' lease. The traffic of the subway has been larger than was anticipated, and the financial success of the enterprise is fully assured. Indeed, this first subway promises to be so profitable that capitalists are now willing to build parallel subways. New York will, doubtless, have numerous subways constructed during the next score of years, and it is not impossible that the city may be able ultimately to dispense with its north and south surface lines and thereby reserve the streets for vehicular traffic.

Illinois and Chicago.—The problem of street railway regulation has been under public consideration in Illinois and Chicago

almost continuously during the past ten years. The numerous franchises held by the two corporations controlling the nine hundred miles of street railways in that large city were limited to a period of twenty years, the end of which period in most instances fell between 1903 and 1907. Between 1897 and 1900 the street railway corporations made an unsuccessful attempt to secure the extension of their franchises for a period of fifty years. This aroused a vigorous public opposition, which in 1903 led to the passage of a state law authorizing the cities of Illinois to purchase and operate street railways. This law applies generally to all cities, but was passed with special reference to the City of Chicago.

Most of the early street railways in Chicago were constructed under franchises having a duration of twenty-five years. Under the law passed in 1865 the street railway companies then existing were granted an extension of their charters for ninety-nine years. This law was very unpopular and led to a great controversy, the result of which was a compromise in 1874 by which all street railway franchises were to be limited in the future to a period of twenty years. In 1883 all existing charters were extended to twenty years from date.

Recent events in Chicago are of such interest that they merit statement in some detail. In 1897 the street railway companies of Chicago, foreseeing that most of their charters would probably expire between 1903 and 1907, induced the legislature of the State of Illinois to pass the so-called Allen law, which extended all street railway charters fifty years and authorized the charging of a five cent fare during that period. This act of the state legislature aroused strong and general opposition on the part of the people of Chicago, and the City Councils, in 1898, refused to grant the franchises required by the street railway companies in order to avail themselves of the privileges they had secured by the Allen law. The universal protest against the Allen law led to its repeal by the state legislature in 1899. This was followed by a strong agitation in Chicago to bring about municipal ownership and operation of the street railways within the city. The result of this movement was the passage, in May, 1903, of the Mueller law, authorizing "cities to acquire, construct, own, operate and lease street railways and to provide the means therefor."

The City Councils decided to give the people of the City of

Chicago, by means of a referendum, a right to decide whether the city should avail itself of the powers granted by the Mueller law, and in 1904 the voters of the city authorized the city government "to proceed without delay to acquire the ownership of the street railways." The City Councils were slow in acting in accordance with the referendum, and consequently the matter came up for popular vote upon a second referendum in 1905, at which time the people decided against granting franchises to street railway companies permitting them to continue the operation of the street railways. These referendum votes practically decided that the City of Chicago should proceed with the acquisition of the street railway lines within the city's limits.

Before the city could accomplish the municipalization of the street railways, three problems had to be settled:

(1) The first of these was as to the actual date of the expiration of the charters held by the street railways in the city. As was stated above, the legislature in 1865 had granted a ninety-nine-year extension to street railway charters; but in 1874 a law had been passed limiting all street railway franchises to twenty-year periods, and in 1883 another law had been enacted extending charters to twenty years from date. The street railway companies claimed that the ninety-nine-year act was valid, and that none of their charters expired before 1958. This matter was passed upon by the state courts and finally decided by the United States Supreme Court on the 16th of March, 1906, which court held that "the ninety-nine-year act, while extending the corporate existence of the three companies to which it applied, did not extend their street privileges."

(2) Another important question that required settlement was the purchase price to be paid the street railway companies by the city, and the terms under which the city should acquire the ownership of the property. After extensive negotiations an agreement was reached at the close of 1906 that the street railway property should be valued at \$50,000,000, the property of the Union Traction system being considered worth \$29,000,000, and that of the City Railway system at \$21,000,000. The power of the city to issue certificates of indebtedness for the purpose of purchasing the street railways in accordance with the authority granted by the Mueller law has been decided in the courts and in favor of the city, viz., the Mueller law has been upheld.

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(3) The third large question was whether the city should take over the street railway lines at once and operate them, or whether it should leave them, temporarily at least, in the hands of the present operating companies, to be managed by them in accordance with the terms to be agreed upon between the companies and the city. The officials representing the City of Chicago have decided in favor of leaving the property in the ownership and under the management of the street railway companies, under the provisions of a city ordinance authorizing the city to take over the street railways whenever it may choose to do so at the agreed value of \$50,000,000.

An ordinance to carry out this program is now before the City Councils of Chicago, and the people of the city, by referendum vote, are to decide at the spring election what the City Councils shall do. It is highly probable that the vote will instruct the City Councils to pass the ordinance now pending.

The provisions of this ordinance merit careful consideration by all students of the public regulation of street railways. The ordinance¹ provides for:

The immediate rehabilitation of the said street railway systems and for the right of the City of Chicago or its licensee to purchase the same, on the first day of February and on the first day of August of each and any year, upon giving six months' previous notice, in writing, and upon definite terms fixed in the respective ordinances.

The city and the companies respectively agree that the value of the present tangible and intangible property of the Union Traction system is \$29,000,000, and of the City Railway system, \$21,000,000.

The companies agree that they will proceed at once to rehabilitate and re-equip their entire street railway systems and put the same in first-class conditions, in full compliance with specifications for such work and under the supervision of a Board of Supervising Engineers created under the ordinances.

The city or any other company authorized by it is given the right to purchase the entire property of the two systems, or either of them, upon the payment of the agreed price of the present property of each company, respectively, and the cost of rehabilitation and extensions, including fair allowances for construction, profit and brokerage.

If the street railways are to be so acquired for operation by a private corporation, for its own profit, the purchase price is to be increased twenty per cent.

The companies are limited, during their operation, to an interest return of five per cent upon the agreed value of their property, plus the cost of

¹This summary of the main provisions of the ordinances is quoted from the report submitted to the City Councils of Chicago, January 15, 1907, by the Committee on Local Transportation, Charles Werno, chairman.

rehabilitation and extensions. The fare for one continuous ride within the city is to be five cents.

The net profits from the operation of the street railways are to be divided between the city and the companies in the ratio of fifty-five per cent to the city and forty-five per cent to the companies.

The ordinances provide for a comprehensive system of transfers and through routes, by means of which passengers can ride over all connecting lines within the city limits.

The companies agree, upon demand of the city and at the city's option, to furnish funds to the amount of \$5,000,000 for the construction of a central subway, to be built and owned by the city, the plans for which are to be approved by the Board of Supervising Engineers.

The British System of Street Railway Regulation.—The regulation of street railways in Great Britain is based upon the Tramways Act of 1870. Most of the tramways were constructed by private companies. Under the act of 1870 the (1) tenure of their franchises is limited to twenty-one years, (2) the local authorities have power to pass upon or veto the proposed tramway project, and (3) also have power to buy out the tramway company at the end of the twenty-one-year period by "paying the then value (exclusive of any allowance for past or future profits of the undertaking or any compensation for compulsory sale, or other consideration whatsoever) of the tramway."

Under the act of 1870 the municipalities of Great Britain have had the authority to construct, purchase and manage their tramway systems. Since 1891 the franchises of many street railway companies have reached their term limit, and numerous cities have had the option of renewing these franchises or purchasing the tramways in accordance with the provisions of the act of 1870. The tendency has been for the cities to buy out the tramways and either operate the railways as municipal enterprises or to lease them to private companies for operation under municipal supervision. Municipal operation as well as ownership seems to be the favored policy, and most of the largest cities of the United Kingdom now manage their tramways. Manchester, Liverpool, Glasgow, Birmingham and London (the "County of London") are among the large cities which own and operate their tramways.

In 1893 there were only twenty-eight street railway lines aggregating 170 miles, owned by municipalities in Great Britain. In 1901 there were 99 enterprises, aggregating 689 miles. During

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this period of eight years there was no increase in the number of private companies, and the growth in mileage owned by private companies was from 501 to 616 miles. In 1904 there were 162 street railways in Great Britain owned by cities, with 1,148 miles of tramways. The number of private undertakings was 150, with a total line mileage of 692.

The tendency of the cities of Great Britain to municipalize street railway transportation may be illustrated by referring to the recent experience of London. In accordance with the provisions of the act of 1870, supplemented by the London County Tramways Act of 1896, the County of London has acquired nearly all of the surface tramways within the county limits. .

On account of the narrow streets and density of traffic the mileage of surface railways or tramways within Greater London is relatively small. In 1903 the route or line mileage within the County of London, which constitutes the inner portion of the area of Greater London, was 115½ miles. This does not include the numerous subways and tubes now in operation. Of the tramway line mileage, 99¼ miles, or all but 16¼, the London County Council has either purchased or announced its intention of purchasing. In 1903 most of the tramways within the county north of the Thames were being operated by a company to which the line had been leased by the London County Council. Since then the operation of this line has been taken over by the Council, and at the present time practically all of the surface tramways within the area of the County of London are operated by the County Council. Within the Metropolitan, or Greater London district, and outside of the County of London, there are numerous electric tramways operated by chartered companies; but even they are coming under the ownership and operation of public authority.

Rapid transit in London is supplied mainly by tubes or subways. At the present time the old Metropolitan system, which is part subway and part open line, comprises 35½ miles of route and 71 miles of single track. The six electric tubes now in operation have a route length of 30¾ miles. Thus the Metropolitan system and the tubes give London 66¼ miles of underground street railways. The companies operating these underground lines derive their charters from Parliament by private bills, and thus do not come directly under the control of the London County Council. They

are under the control of public authority and will, doubtless, in time, be subject to regulation by the municipal government of London as well as by the Royal Government.

The German System.—Although Germany is a confederation of several states, each of which has authority to determine the conditions under which street railway companies may be incorporated, the imperial code of 1900 establishes practical uniformity among the several states as regards their system of public control of urban transportation. The German system may be summarized by stating that it comprises (1) a detailed regulation of the service through the charter provisions required by the laws of the states and the imperial code, (2) the local governmental authorities have the power to grant or withhold franchises and also have the power to construct, purchase or operate the street railways, (3) both private and municipal systems of street railway management prevail in Germany. Some cities have private street railway companies, other cities own and operate the lines within their limits. Some of the cities owning lines lease them to private companies; but the usual practice is for the city to operate the lines in its possession. In 1902 eighteen of the one hundred and thirty-three German cities owned the street car systems within their limits. In this list are such large cities as Dresden, Munich, Mayence, Cologne, Frankfurt, and Halle.

In the metropolis of the country, Berlin, the agitation for the municipalization of street railway transportation has thus far been unsuccessful, and the franchise of the most important company operating surface lines in the city has been extended until 1949, the city reserving the right to purchase before the expiration of the franchise. The elevated road extending through and around the city is a part of the Prussian state railway system. A new and excellent underground and elevated road has been put into operation by the great firm of Siemens & Halske, which company pays the cities of Berlin and Charlottenburg a liberal percentage of its annual income. The annual percentage increases with the growth of the company's annual receipts.

As in Great Britain, so in Germany, the tendency is distinctly towards the municipalization of the street railway service. This tendency is in accordance with the development of state ownership and management of transportation agencies in Germany. In Great

Britain, however, there is no apparent demand for the nationalization of the steam railroads, and the tendency towards municipalization of street railways represents a departure from the theories which have in the past prevailed regarding the best relations of the government to the transportation service.

Comparison of Municipal and Private Ownership.—In the United States, street railways, with the exception of certain subways, are owned by private companies. In Europe, although the majority of the street railway enterprises are still owned by corporations, the tendency is towards the purchase and operation of the tramways by city governments. The success that has attended municipal ownership and operation has been such as to lead some persons to conclude that all cities, both European and American, might advantageously adopt the policy of municipalization of the street railway service.

In Great Britain the street railway service during the decade following 1890 was generally unsatisfactory. This was in part due to the fact that the Tramways Act of 1870, by which franchises were limited to periods of twenty-one years, foreshadowed a policy of municipalization of the private lines. When the time came for changing from horse to electric traction, the private companies generally neglected the service, with results that are well stated in the following quotation taken from the minutes of the Plymouth, England, Town Council:

The main objects of the corporation in purchasing the tramways were to get rid of the company management, which had failed to give the public an effective tramway service and which had exhibited so considerable disregard of public inconvenience and remonstrance, and in the second place the direction and control of the policy of the tramway extension in the hands of the council as representing the general body of ratepayers, for the general benefit of the borough, instead of leaving the tramway system to be developed and extended for the purpose of securing profits to shareholders without regard to local necessities.

The main advantages of municipal ownership and operation are:

- (1) The possibility of low fares and of adjusting fares with reference to the most advantageous distribution of population.
- (2) The ability of the city to regulate the wages and hours of labor of the street railway employees.

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(3) To secure to the city the increasing profits resulting from the growth of population and traffic.

Assuming that a municipal government is honest and is able to manage the street railway service efficiently, the advantages of municipalization are manifest. There are, however, certain dangers connected with municipal ownership and operation even under the favorable conditions prevailing in the cities of Western Europe:

1. There is the liability that municipal debts may be greatly increased and that the cities may be so desirous of reducing street railway fares as to neglect to provide for the payment of the railway debt within the proper period.

2. Writers opposed to municipalization claim that the city is more liable than private corporations are to allow the track and equipment to depreciate, and to neglect the construction of new tracks extending the lines into unoccupied suburban regions.

3. It is also claimed that the municipalization of street railways will restrict the construction of interurban electric lines, for the reason that each city will be disposed to confine its lines to the region within its own limits, and that, having done so, private companies will not find it profitable to construct lines connecting the cities.

European cities have so recently adopted the policy of municipalization of street railways that it is too early to determine what their policy will be as to the payment of the debts incurred in buying out the corporations or in constructing new lines, or what their policy will be regarding the maintenance of their track and equipment, and whether they will extend their systems with adequate rapidity. In general, it may be said that the British and Continental cities have thus far dealt satisfactorily with these questions. Whether municipalization will hinder the construction of interurban lines remains to be seen, but it seems probable that this may prove to be a somewhat important consequence of municipalization.

The success that is attending the purchase and operation of street railways by foreign cities argues but little for such a policy for American cities. The condition of municipal government in the United States is such as to discourage the ownership and operation of street railways by public authorities at the present time. For the United States the policy for some time to come should be one

of public regulation rather than one of public ownership and operation.

The Street Railway "Problem" in the United States.—The adjustment of the relations of the public authority to the street railway transportation service is a problem comprising the regulation of the provisions of the charter and franchise granted to the company, the regulation of the capitalization and financial methods of the corporation performing the service, the public supervision of the service, the control of the fares, and the adoption and enforcement of wise methods of taxation. This is indeed a complicated problem, the solution of which has been as yet but partly accomplished. The regulation of the franchises, services and charges of street railways needs to be more detailed than is required in the case of steam railroads, because the street railway service is more completely monopolistic than is the business of railroad transportation.

That these facts necessitate a detailed regulation of the street railway service is being increasingly recognized in the United States is shown by the general tendencies discernible in the legislation of the states:

1. There is a tendency to limit the period for which the franchises are granted, and to increase the obligations to be met by the companies in order for them to maintain the validity of the franchises they receive from the public. The states are giving the cities power to exact more than they formerly could of the street railway companies, and the cities are showing an increasing disposition to avail themselves of the powers they have received from the states.

2. The state and municipal control over fares is being more frequently exercised. In several states and in numerous cities efforts are being made to establish an effective public regulation of street railway charges. These efforts indicate more clearly than any other movement could the tendency towards a greater exercise of public authority.

3. There is a growing disposition to tax the franchises and earnings of street railway companies as well as their physical property. The fact is coming to be recognized that taxation levied only on the physical property of street railway companies reaches but a small part of the value possessed by the companies, and that an adequate system of taxation necessitates the taxation either of the franchises or of the earnings of the companies. Moreover, the

legal limitations ordinarily placed upon property taxation—that all kinds of property shall be taxed equally—presents another reason for adopting some other basis than physical property for the assessment of street railway companies. In some states the value of the street railway franchise is reached for purposes of taxation by treating the franchises as property and thus avoiding the restrictions of the laws regarding taxation of all physical property. The most convenient and, on the whole, the most practicable method of taxing street railway companies is that of requiring them to turn over to the city annually a liberal percentage of their gross receipts. While the gross receipts tax is not theoretically the most ideal one, the objections to it are not important in the case of the street railway business, and its advantages outweigh the theoretical objections.

The present thought regarding the proper solution of the street railway problem in the United States may be approximately summarized as follows:

(1) A five-cent fare, with six tickets for a quarter, and a general system of transfers; (2) that the service shall be performed by chartered companies, but that each company shall pay to the city a percentage of its gross receipts and be required to pave and sprinkle the parts of the streets occupied by its tracks; (3) that capitalization of the company shall be regulated by public authority and over-capitalization prohibited; (4) that franchises shall be limited to twenty or thirty years, and that the city should retain the right to purchase at the expiration of this period the property of the company at a fair valuation; (5) that a commission or some other public authority shall pass upon the public necessity for a proposed street railway, and regulate the service in the public interest; (6) that the annual reports made to the state and city shall give full information regarding both the service and finances of the company.

The general problem of the public regulation of street railways has been simplified both by the consolidations that have brought the street railways systems in each of most of our large cities under a single control, and by the recognition on the part of the public of the fact that the street railway service is a monopoly and must be regulated as such. The fact that the street railway service is a monopoly not only necessitates public regulation, but makes possible more efficient public control. The truth of this is

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well illustrated in Boston, where all the lines, elevated, surface and subway, are operated by a single company. Over-capitalization has been prevented, the fares are being regulated, and different parts of the street railway systems are co-ordinated so as to secure a good service in a city where the difficulties of providing street railway transportation were exceptional. What Massachusetts and Boston have done other states and cities can, and doubtless will do. Indeed, hopeful progress is being made in several states, and the successful solution of the "street railway problem" in the United States by public regulation rather than by municipalization seems more than probable.

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- "The Movement for Municipal Ownership in Chicago." By Hugo S. Grosser. *Ibid.*
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- "Chicago Traction: A Study in Political Evolution." By Willard E. Hotchkiss. *ANNALS*, November, 1906.
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by the commission, the other six volumes being devoted to minutes of evidence and appendices. These seven volumes constitute a rich mine of information regarding the tramway systems of England, the United States and the Continent of Europe, and deal fully both with the technical questions and with the various systems of public control of street railway transportation.)

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RATE CONTROL UNDER THE AMENDED INTERSTATE COMMERCE ACT

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Under the Interstate Commerce Act, as originally passed in 1887, the Commission assumed that it possessed the power to prescribe rates for railroad companies. In 1896 and 1897, however, the Supreme Court rendered decisions¹ denying this power and announcing that while the commission might declare existing rates unreasonable, it was not empowered by the act to substitute other rates to be observed in future. Thus shorn of its authority, the commission appealed to Congress for a restoration of it, and, as the years passed by, repeatedly renewed its petition. For several years, however, Congress steadfastly turned a deaf ear to its prayers, until public opinion, awakened largely by the President, came to the aid of the commission. By 1904 there had been manifested an impressive public sentiment in favor of railroad reform, and under this stress the Esch-Townsend bill achieved a remarkable success in the house. But the senate compassed its downfall. Nevertheless, during the succeeding months, popular sentiment continued to grow, and in consequence, when the members of Congress next assembled, in December of 1905, it was generally agreed among them that railroad legislation of some sort would have to be enacted. Moreover, it was almost as generally acknowledged that one feature of the legislation would have to be a grant of the rate-making power to the Interstate Commerce Commission.

But the recognition that this step was practically inevitable did not altogether do away with consideration of its general policy. Especially, at first, was much oratory devoted to its constitutional features. But all such discussion speedily dwindled in importance, and it was soon recognized that the significant feature of the Congressional task was the formulation of the various specific provisions of the law. Granted that the commission should have the

¹162 U. S. 184, and 167 U. S. 479.

rate-making power, the real struggle was involved in the determination of the character and limitations of that authority. In this connection several important questions arose, and the earnest debates upon them revealed a wide difference of opinion between the extreme conservatives and the extreme radicals. Ultimately, however, a compromise was reached on each point, and at the eleventh hour the bill was passed and became a law.

The more important of the questions which presented themselves to Congress pertained to the following matters: (1) The rates which should be made subject to the commission; (2) the circumstances under which the commission should be authorized to prescribe rates; (3) the character of the rates thus established; (4) the review of these rates by the courts; (5) the expedients which should be adopted to mitigate the evils resulting from judicial review; and (6) the penalties to be imposed for the violation of the commission's orders establishing rates. It is the purpose of this article to discuss the manner in which these subjects are treated in the Interstate Commerce Act as now amended.

1. *The Rates Subject to the Commission.*—To begin with, the rate-making power of the commission applies to all common carriers by rail, or by both rail and water, when both are under common control or management, or arrangement for a continuous carriage. It also applies to express companies, sleeping car companies, and all corporations or persons operating pipe lines,² the insertion of these provisions being the outcome of extended discussion in Congress. The power extends to all rates not purely intrastate, whether charged for the transportation of persons or property, and it is clearly the design of the act that the charges for all services rendered in connection with such transportation shall be under the control of the commission. Many elements to be regarded as included in the term "transportation" are enumerated in the first section, and it is interesting to note that they embrace, among other things, "all services in connection with the receipt, delivery, elevation, and transfer in transit, ventilation, refrigeration or icing, storage and handling of property transported." The commission is also granted a limited authority over joint rates. When two or more connecting carriers, one of whom may be a carrier by water, have failed to establish through routes and joint rates, and no

²Other than for the transportation of water and natural or artificial gas.

reasonable or satisfactory through routes exist, the commission may, on complaint, establish such through routes and prescribe the rates applicable thereto. Finally, the power of the commission covers the allowances made by carriers to shippers who directly or indirectly render any service in connection with the transportation of their goods, this provision being designed to remedy a familiar form of discrimination. Thus it will be seen that a very comprehensive authority is accorded the commission, its one weakness, probably, being a lack of power over transportation exclusively by water.

2. *When Rates May be Made.*—A second matter of importance has reference to the circumstances under which the commission may establish rates. In determining this question three alternatives were open to Congress. The commission might be required to wait until complaints of unreasonable rates were brought to it before it could move in the matter of rate-making. Such a provision would give it something of the character of a court, which cannot seek cases to decide, but must wait until the parties voluntarily institute proceedings. Or, secondly, the commission might be empowered to take the initiative in the matter, establishing rates on its own motion, though, of course, after proper investigation and hearing. Or, thirdly, it might be given, practically if not nominally, the status of chief traffic manager for the various railroad companies. While, in such a case, the entire work of rate-making would not be placed in its hands, the final authority and responsibility would be lodged there. Of these three forms of rate control, Congress elected to adopt the mildest. The commission is empowered to act only upon complaint; it cannot take the initiative. Such a limited power, of course, gives rise to a serious difficulty. The establishment of certain rates, following a complaint, may render highly desirable the readjustment of other related rates; yet the commission is without authority to touch them, until and unless a complaint is filed. There is, however, another provision of the act which opens an avenue of escape from this difficulty. It is provided that "no complaint shall at any time be dismissed because of the absence of direct damage to the complainant." Thus it is possible for the commission, if it desires to investigate rates, to set up dummies to bring the formal complaints demanded by the act. This is, of course, a nuisance, and may involve some small sacrifice of official dignity,

but aside from these embarrassments the commission is as much at liberty to investigate rates as if the right of initiative had been granted to it.

3. *The Character of the Rates.*—Two things may be said as to the character of the rates to be established by the commission. First, they are to be merely the *maximum*. No power is given to fix an absolute rate, or to prescribe a minimum charge. Of course a maximum rate is to a limited extent a minimum rate as well, inasmuch as many reductions from it can be assailed as unjustly discriminatory, and so can be prevented; but obviously this is not true of all reductions. Hence it is thought by many that the failure of the act to provide for minimum rates is unfortunate, especially, because it may impair the enforcement of differentials by the commission. It must be confessed, however, that the establishment of a minimum rate appears to be beyond the powers of Congress. Though this question has never been judicially determined, and so must be regarded as somewhat uncertain, little doubt remains after a consideration of the following facts. The Supreme Court has come just short of deciding that the power of the states is limited to the fixing of maximum rates. The point has never been directly at issue before the court, and so an absolutely final *dictum* has not been given; but repeatedly, from the earliest cases to the present time, the court, in asserting the states' power over rates, has defined it as an authority to fix a maximum. The court has never positively stated that a minimum is beyond the states' power, because it has never had occasion to decide the question, but its constant employment of "maximum" or other words of like import in defining that power is all but conclusive on the point. This being true, the thought naturally occurs that if the people of the several states do not possess the right to fix a minimum rate, they could hardly have conferred that right upon Congress. However, in spite of this consideration, it is regarded as unfortunate that Congress did not in the act provide for a minimum rate. The point would then come up for judicial interpretation and would be settled. Even were the provision declared to be beyond the competence of Congress, its rejection would not impair the validity of the balance of the act; and were it sustained it would doubtless strengthen the hands of the commission.

A second provision as to the character of the commission's

rates is that they shall be just and reasonable, but the discussion of this requirement will be undertaken under our next head.

4. *Judicial Review.*—Of all the questions which presented themselves to Congress, none matched in importance that which pertained to the review by the courts of rates prescribed by the commission. It was generally recognized that upon the answer to this question, more than upon anything else, depended the effectiveness of the provision for rate regulation. For the purpose of judicial review is to determine whether, in prescribing rates, the commission has exceeded its powers, and to restrain its action if such has been the case. The inquiry of the courts may take different directions. It may be designed to discover whether the charges which have been regulated are among those subject to the commission, or whether that board has complied with the requirements of the act as to its procedure in the investigation and establishment of rates; but by all means the most important specific aim of judicial review is to determine whether the rates prescribed by the commission are unduly low, and if they are, to restrain their enforcement. Were the courts to possess no right of review there would be no limit to the commission's power of rate reduction, except its own discretion. It might reduce rates to zero. Judicial review, then, is a restraint upon the commission's power of rate control, and the broader that review, the more circumscribed is the authority of the commission. This is why the question was acknowledged to be the very heart of the whole problem. Though the rate-making power might be granted in terms, it might be practically nullified by conferring upon the courts a very broad right of review. In any case, the strength of the commission would largely depend upon the character of the provision for judicial review.

Doubtless the simplest plan would have been to say nothing at all upon the subject in the act, and this suggestion was not without its advocates. But it was vigorously opposed by the representatives of the railroad interests, together with other conservatives, who expressed the fear that if the act were silent on the matter it might be declared unconstitutional, as denying the right of review to the courts. Most persons, however, were not affected by this apprehension. It was evident to them that the courts needed no authorization from Congress to review the commission's rates; that the constitution itself confers that right. The constitution not only

bestows upon Congress the power to regulate commerce, but it also provides, as a limitation upon the federal government, that no person shall be deprived of property without due process of law and without just compensation. Beyond a doubt, then, the courts would not permit rates made by Congressional authority, under the commerce clause, to be enforced, if they contravened that other and more recently adopted provision regarding deprivation of property. Congress cannot, under the guise of legislating in pursuance of one clause, violate another, especially a more recently adopted provision. As the guardians of the constitution, the courts would be abundantly competent to pass upon the constitutionality of rates made by the commission, and so, without any provision in the act, the commission's rates would be subject to judicial review.

But though this seemed clear, the reform element in Congress was not in a position to insist upon the silence of the act, for such insistence might cast suspicion upon their good faith. If they believed that judicial review ought to exist, what objection could they have to saying so in the act? Therefore it was conceded that some provision on the subject should be enacted.

That being settled, the next step was to formulate the provision, and this involved the determination of the power which should be conceded to the courts, and, conversely, to the commission. Obviously here, again, two courses were open. The act might simply state that the courts should be competent to pass upon the constitutionality of the rates; or, it might give them a broader right of review. To put it otherwise, the act might simply aim to protect the railroads in the enjoyment of their constitutional rights, or it might confer on them additional rights, and charge the courts with the duty of protecting them. In the former case the commission would possess just the same power over interstate rates that state commissions have over local tariffs; in the latter, it would have a more limited authority.

The natural course would have been to adopt the former alternative, confining the courts to an adjudication of the constitutional question; but the conservative element, inspired by its late victory, felt emboldened to stand out for a broader right of review, with the purpose of weakening the commission's efficiency. The result was a struggle which lasted until late in June, when it was terminated by a compromise. The curious feature of this compromise

is that no one can be absolutely sure of its meaning. The wording of the act as it now stands is to some extent indefinite and ambiguous, and not until a case has been passed upon by the Supreme Court will its meaning be surely known. At this time all that can be done is to call attention to the various clauses of the act bearing upon the question, and to indicate some of the considerations to which weight will doubtless be attached by the court.

The clause which confers the power of review is as follows:

The venue of suits brought in any of the circuit courts of the United States against the commission to enjoin, set aside, annul, or suspend any order or requirement of the commission shall be in the district where the carrier against whom such order or requirement may have been made has its principal operating office, and may be brought at any time after such order is promulgated. And if the order or requirement has been made against two or more carriers then in the district where any one of said carriers has its principal operating office, and if the carrier has its principal operating office in the District of Columbia then the venue shall be in the district where said carrier has its principal office; and jurisdiction to hear and determine such suits is hereby vested in such courts.

It will be seen that this clause is wholly indefinite. It vests in the circuit courts the power to hear and determine suits to set aside, annul, or suspend any order of the commission, but it says nothing as to the ground on which the courts can set aside the commission's rates. May they annul them on the ground of unconstitutionality alone, or on some other ground? To this question no direct answer is given, and therefore the various provisions of the act must be scrutinized to see if they reveal the Congressional intent. Power to judge of the constitutionality of the rates is surely in the hands of the courts, but if they possess any other or broader power, it must be because the act confers it upon them.

Looking into this question, we find several clauses in the amended act which seem to bear upon it. One, found in the first section, simply repeats with a slight modification a provision in the original act. It is the general, sweeping declaration that all rates and charges "shall be just and reasonable; and every unjust and unreasonable charge . . . is prohibited and declared to be unlawful."

Another clause of importance in this connection is found in section 15, where the rate-making power is conferred on the commission. "The commission is authorized and empowered, and it

shall be its duty . . . to determine and prescribe what will be the just and reasonable rate or rates, charge or charges to be thereafter observed." And later in the same section the commission is authorized to "determine what is a reasonable charge" to be paid by a carrier to a shipper who renders some service in connection with the transportation of his goods.

It is evident from these citations that Congress intends all rates to be reasonable. Even the commission is placed under the duty of prescribing "what will be the just and reasonable rate or rates." This being true, the question of the interpretation which the courts will give to this requirement becomes a matter of great moment. How will they undertake to determine whether rates are reasonable or not? By what standards will they judge them?

The word "reasonable" is the despair of the layman, and surely can be scarcely less distressing to the members of the legal profession. The multitude of considerations—ethical, economic, social and political, as well as strictly legal—which must be taken into account in discovering what is reasonable in any connection, together with scarcity of guiding principles general enough to be true, yet concrete enough to be useful, conspire to make the task one of greatest difficulty. The reasonableness of railroad rates furnishes no exception to this rule. Yet amid all the confusion of infinite detail one fact is clear. There are but two avenues along which the courts have ever attempted to proceed in judging of the reasonableness of rates. There are, in other words, but two judicial tests of reasonableness. One may be termed the test of "constitutionality," and the other the test of "remuneration." The principles and methods according to which these tests should be applied are at present involved in much uncertainty, but the tests themselves may nevertheless be clearly distinguished.

The constitutional test has been repeatedly applied in cases involving rates made by state legislatures and commissions, and so its general nature is well understood. Its aim is to discover whether the rates are of such a character as to violate the Federal Constitution, for if they are, they must be held to be unreasonable. The precise question which arises relates to the Fourteenth Amendment, which provides that no person shall be deprived of property without due process of law. The term "due process of law," as interpreted by the courts, embraces more than the mere formal proceedings

characteristic of a tribunal of justice. In it is included the further idea of "just compensation." Due process of law is not observed in the appropriation of private property by the state unless the owner is adequately recompensed, and this, indeed, is the most significant element in "due process." In judging, then, of the constitutionality of rates, the courts must determine whether the state, without providing for compensation, has imposed rates which are so low as to deprive the railroads of property.

But how is it that rates may "deprive of property?" Clearly they cannot operate in such a manner as to appropriate any of the tangible property of a railroad company. But the courts hold that under the Fourteenth Amendment a person is entitled to protection against the seizure, without compensation, not only of his property, but of its fruits as well, which in the eyes of the law *are* property. Hence a railroad company, though subject to public control of its rates, is constitutionally entitled to a reasonable income from its business, and the imposition of rates which are so low as to prevent it from earning such an income amounts to a deprivation of its property.

At this point the judicial doctrine is confronted by another difficulty. What is a reasonable income from a railroad's business? It will not promote our present purpose to inquire into this question in detail. It will be sufficient to observe that the courts have decided that no definite rate of net income can be stated; that it must vary with the circumstances of each case; that in an extreme case it might even be equal to zero; and that, whatever the rate is, it must be reckoned on the actual value of the property, rather than on its original value, on the company's capitalization, or on any other base. Beyond this we shall not go,³ for it is desired simply to make clear the nature of the "constitutional test." Whether rates are reasonable depends on whether they are high enough to permit the railroad company to earn a reasonable income from its business. The rates are judged according to their effect upon the net returns of the business.

Now the "test of remuneration" must be sharply distinguished from this. It is not concerned with the company's income, but

³For a full discussion of the principles and methods of the courts in applying this test of constitutionality, see the author's "Railroad Rate Control in its Legal Aspects," Publications of the American Economic Association, May, 1906.

rather with the separate services rendered by the company to its patrons. Its aim is to secure for the railroad a reasonable remuneration for each service rendered. Of course the difficulty arises of determining what a "reasonable" remuneration is, and into that question we cannot go, save to remark that it is to be determined, among other things, by the nature and cost of the service, and by its importance and value to the shipper, the customary rate, if there is one, being strong evidence of what is reasonable. The validity of the rates, then, under this test, is a matter of their relation to the services rendered by the company, which is entitled to a just compensation for each service. Now, of course, it can be imagined that according to this standard rates might be recognized as reasonable, though so low as not to yield a reasonable income, and that consequently this might not be so favorable to the railroad as the constitutional test. But while such a case is conceivable, it is highly improbable. It is much more likely that the remuneration test would prove more favorable; that under it rates held to be but barely reasonable would yield a large income. In the words of Mr. Justice Brewer,⁴ if a carrier "has a thousand transactions a day and his charges in each are but a reasonable compensation for the benefit received by the party dealing with him, such charges do not become unreasonable because by reason of the multitude [of his transactions] the aggregate of his profits is large."

At this point an inquiry is natural. How do the courts use these two tests of reasonableness? When do they apply one and when the other? As already intimated, they employ the constitutional test in cases where rates are involved which have been made by public authority. They employ the other in cases where no government interference has occurred, but where there is simply a dispute between the road and an individual shipper. By the common law a common carrier is entitled to a reasonable compensation for each service, and if sued by a shipper for overcharge, this is the point considered by the courts in determining whether there has been an excessive exaction. One test, therefore, is used in cases of government-made rates; the other in private disputes as to the fairness of charges, in the absence of governmental regulation.

Still another distinction in the use of these two tests was suggested by Mr. Justice Brewer some five years ago. In his

⁴In *Cotting v. Kansas City Stock Yards Co.*, 183 U. S. 79, 95.

opinion, in *Cotting v. Kansas City Stock Yards Company*,⁵ he called attention to the fact that there are two classes of industries subject to public control of their rates—those which are public, and those which, though private in nature, have become so “affected with a public interest” as to be fit subjects for such regulation. He then questioned whether the legislature should be allowed to go so far in controlling charges in private business as in public, and expressed the conviction that it should not; that while a public business is entitled, in spite of legislative enactments, to no more than rates high enough to yield a reasonable income, a private business should be allowed to collect a reasonable charge for each service, though the resultant earnings might be great. In short, he advocated the application of the constitutional test to public business, and of the remuneration test to private business.⁶

We are now prepared to note the consequences that would flow from the adoption by the courts of either of these tests in judging of the reasonableness of rates made by the Interstate Commerce Commission. Were the constitutional test to be applied, the commission would have just the same power over rates that any state commission may have, and no more; but were the remuneration test to be employed, its authority would be more narrowly limited. It could go no farther than the common law itself. The railroads would be entitled to rates just as high as they could lawfully demand, even in the absence of Congressional regulation. In other words, the commission would be prevented from reducing their rates below the maximum amount which they were legally entitled to receive before the commission was created. The action of Congress in bestowing the rate-making power on the commission would be in large part futile, for it would not result even in the possibility of lowering the legal maximum for rates.

Yet this is exactly the situation which some of the conservatives in Congress desired to bring about, and for which they labored most arduously. It was their endeavor to secure the insertion in the bill of words which would require the courts to apply the remuneration test. For example, a provision that the rates made by the com-

⁵183 U. S. 79.

⁶It must be stated that these remarks of Justice Brewer's were *obiter dicta*, and therefore stand only as the expression of his personal opinion, not as settled law. Nevertheless they are entitled to great weight because of the recognized learning and ability of their distinguished author.

mission should be "fairly remunerative" was placed in the bill, and remained there until the final compromise. Had they not been eliminated, the ambition of the conservatives would probably have been realized. For they might reasonably have been interpreted by the courts as requiring the test of remuneration.

But it is our special purpose to consider the effect of the act as finally passed. Containing, as it does, the simple requirement that rates must be reasonable, which method of determining reasonableness will the Supreme Court adopt? Of course it is evident that the court alone can furnish a final answer to this question. It is not bound by precedent or other authority, and can use its own discretion. There are certain considerations, however, which point toward its adoption of the constitutional test, and these may be briefly noticed.

In the first place, it must be recognized that rate-making is a legislative function, in the exercise of which the commission is simply acting for Congress and doing its will. Now there is no question that Congress may regulate rates, subject only to constitutional restraints. And it would be hardly proper to assume that Congress meant to limit itself or the commission to a more narrow authority unless that intention clearly appeared. Having granted the commission the rate-making power, it should be presumed that Congress granted it the full power, subject only to such restraints as the constitution or the act itself imposes. And therefore, unless the act in definite terms more narrowly confines its activity, the commission should be allowed to go to the constitutional limit. But the act contains no such definite terms. Therefore the standard of reasonableness should be the constitutional test, and not that of remuneration.

But more definite reasons for the same belief are to be found in the decisions of the court in cases involving rates made by state authority. In reading these cases, one cannot fail to notice that the court repeatedly speaks of its task as involving a determination of the "reasonableness" of the rates. Such quotations as the following will serve to illustrate the point. "It was therefore within the competency of the Circuit Court to enter upon an inquiry as to the reasonableness and justice of rates prescribed by the railroad commission." "The legislature has power to fix rates, and the limit of

¹154 U. S. 399.

judicial interference is protection against unreasonable rates."⁸ "The more difficult question is that connected with the reasonableness of the rates."⁹ But while the court has thus asserted its right and duty to guard the railroads against the enforcement by the state of "unjust" and "unreasonable" rates, it is noteworthy that it consistently employs the constitutional test. Would not the same practice naturally be followed in testing the "reasonableness" of the commission's rates?

It is also a significant fact that two clauses of the act requiring "reasonableness" are substantially the same as those present in various state commission laws which have come under the official scrutiny of the court. Thus a general clause commanding that all rates be reasonable was present in the Iowa act,¹⁰ involved in *Chicago and Northwestern Ry. Co. v. Dey*,¹¹ in the South Dakota act,¹² involved in *Chicago, Milwaukee and St. Paul Ry. Co. v. Tompkins*,¹³ and in the Minnesota act,¹⁴ involved in *Minneapolis and St. Louis Rd. Co. v. Minnesota*.¹⁵ Moreover, the additional specification that the commission should prescribe reasonable rates appeared in all of the acts just mentioned, and also in the Texas act,¹⁶ involved in *Reagan v. Farmers' Loan and Trust Co.*¹⁷ Yet in all of these cases the reasonableness of the rates was determined according to the constitutional standard. In the light of this practice, is it likely that the Supreme Court will feel justified in interpreting similar clauses in the Interstate Commerce Act as justifying any other test of the commission's rates?

One or two other considerations point in the same direction. Section 16 of the act provides that "if any carrier fails or neglects to obey any order of the commission, other than for the payment of money," any party injured thereby or the commission itself may institute legal proceedings. And "if, upon such hearing as the court may determine to be necessary, it appears that the order was regu-

⁸143 U. S. 344.

⁹186 U. S. 264; and for other examples see 169 U. S. 546; 176 U. S. 174; and 154 U. S. 397.

¹⁰Laws of 1888, Chap. 28.

¹¹35 Fed. Rep. 866.

¹²Laws of 1897, Chap. 110.

¹³176 U. S. 167.

¹⁴General Statutes for 1894, Sec. 380.

¹⁵186 U. S. 257.

¹⁶Laws of 1891, p. 55.

¹⁷154 U. S. 362.

larly made and duly served, and that the carrier is in disobedience of the same, the court shall enforce obedience to such order by a writ of injunction or other proper process." The significance of this provision seems to be clear. When an order of the commission prescribing rates is disobeyed the commission may petition the Circuit Court to secure its enforcement. The court is allowed but a limited field for its inquiry. Its duty is simply to find out whether the order has been "regularly made" and "duly served." Having determined those questions in the affirmative, it is subject to the imperative duty of enforcing the order. But two observations should be made in this connection. It may be suggested that the courts might interpret the words "regularly made" as justifying an inquiry at large into the reasonableness of the rates. This, however, is most improbable, as it would surely be doing gross violence to the language. It might also be asked whether this provision would not destroy all power in the courts to consider the amount of the rates. Surely not. For the right to determine whether they are too low to be constitutional exists independent of statutory enactment. The courts always enjoy the right of testing the reasonableness of rates according to the constitutional standard; but this clause of section 16 seems to forbid the employment of any other test.

It is also not without significance that in section 15 the commission is authorized to "establish through routes and joint rates," there being no requirement that the rates be reasonable. This certainly indicates that joint rates are subject only to the constitutional test. But if joint rates, why not other charges as well?

We reach, therefore, the conclusion that when a case has arisen under the act and has been finally decided, the advocates of a broad review—of the remuneration test—will in all probability find themselves defeated, and that the commission will be at liberty to reduce rates as far as the constitution will permit.¹⁸ That this outcome is heartily to be desired cannot be doubted. Experience has shown that the state commissions have suffered greatly from judicial review, though that review has rested exclusively upon a constitutional

¹⁸Whether this will be true so far as sleeping car companies are concerned is an interesting question. The tendency of American courts has been to deny that the sleeping car business is public in character. If this view is taken by the Supreme Court, the *dicta* of Justice Brewer in *Cotting v. Kansas City Stock Yards Company*, mentioned above, will become important. For if they are adopted by the court, sleeping car companies will be entitled to rates judged by the test of remuneration.

basis,¹⁰ and the Interstate Commission will doubtless encounter the same obstacles. The difficulties will be great enough under a "constitutional review." They would be insurmountable under a "remuneration review." The "power" of the commission would be little more than nominal.

5. *Provisions to Expedite Judicial Review.*—It was generally acknowledged in Congress that, while judicial review is inevitable and in some ways desirable, it nevertheless presents some disadvantageous features. Among these may be mentioned the delays necessitated by carrying a case through the courts. If rates are suspended pending a final judicial judgment upon their reasonableness, their enforcement may be postponed a matter, not of months, but of years. And that this impairs, and in most cases annihilates, their efficacy is evident. But it seemed to Congress that this incident of judicial review might be met, at least in part, by legislation. Accordingly, the task was undertaken of devising methods to avoid the difficulty, or to mitigate its effects.

The only expedient which finally found a place in the act was designed to hasten the judicial proceedings instituted to annul the commission's rates, or to enforce any order of the commission or any provision of the act. For that purpose the provisions of the Expediting Act of 1903 were, with some modification, made applicable to all such suits. It is now the duty of the attorney general, when any such action is begun, to file with the clerk of the court a certificate declaring "that, in his opinion, the case is of general public importance." "Thereupon such cases shall be given precedence over others, and in every way expedited, and be assigned for hearing at the earliest practical day," with the proviso, however, that when the action is to restrain the enforcement of an order of the commission, that body shall have at least five days' notice prior to the hearing. An appeal is allowed, even, it seems, from an interlocutory decree, but must be taken within thirty days, and only to the Supreme Court, in which it has priority over all causes, except causes of like character and criminal causes. These provisions will no doubt prove useful, though even with their aid the complete trial of a case will doubtless consume many months.

Two other expedients were proposed, but neither adopted. One contemplated the filing of a bond by the railroad, pending judicial

¹⁰A point elaborated in the author's "Railroad Rate Control," *supra* cit.

review, the purpose of the bond being to assure repayment to each shipper of the overcharge should the rates finally be sustained. The obvious weakness of this plan was that the shipper is not always the party injured by the extortion. The second—a more thorough-going plan—proposed that the rates should be made effective pending judicial investigation; that, in other words, the courts should be forbidden to delay their enforcement by the issue of temporary injunctions; that no restraining order should be issued until they should be found to be unreasonable. This proposal seemed eminently reasonable, in view of the accepted canon of statutory construction, that if the constitutionality of a statute is in doubt, the statute must be sustained. Only when its unconstitutionality is proved beyond a reasonable doubt should it be set aside. Now it is recognized by the courts that rates made either by legislatures or commissions are acts of legislation. They should therefore not be annulled until their unconstitutionality is clearly established, which cannot occur until the conclusion of judicial proceedings.

But in spite of all that could be said in its favor, the proposal was vigorously and bitterly opposed. The merits of the question, however, were little considered, for the discussion speedily took the form of a so-called constitutional debate. The right of Congress to limit the judicial power was called in question. It was argued that while Congress could create or abolish the federal courts, other than the Supreme Court, it could not prevent them while existing, from exercising all judicial functions, both legal and equitable, which existed when the constitution was adopted, and which included the power to issue injunctions. On the other hand, it was contended that Congress in creating any particular courts could confer upon them whatever powers it deemed wise. Into the details of these arguments we need not go. The opposition won, and the proposal was defeated. This is very much to be regretted. Few suggestions for rendering more effective the public regulation of rates have been so full of interest as this. While there is serious doubt as to its constitutionality, there can be no doubt that, if held to be valid, it would be of signal service in strengthening public control of rates, and in mitigating some of the serious evil results of judicial review. For this reason the defeat of the plan is deplorable. Had Congress adopted it and embodied it in the act, its constitutionality, which is now in doubt, could have been speedily

determined. Were the decision to go against it, no harm could be done. The validity of the balance of the act would not be affected. But were the decision to be in its favor, there would result a great gain for the cause of railroad reform.

It may be added that the doubt of its constitutionality is due not so much to the consideration suggested above as to something else. The contention that Congress is without power to limit the authority of the lower federal courts is not generally accepted as sound, and probably would not be upheld by the Supreme Court. But there is another ground on which the railroads could base their claim to the temporary injunction. There is no doubt that they are entitled, under the constitution, to a reasonable income from their business. And there is no doubt that if compelled for a year or so to operate rates too low to yield that income, they would be in a sorry plight. When the courts had determined that the rates were unreasonably low, their only remedy would be to sue each shipper for the difference between the charge paid and the reasonable charge, and this would result in a multitude of trivial and unprofitable suits. All this has been repeatedly recognized by the courts, which declare that a railroad suffers irreparable injury if it must operate unreasonable rates pending judicial review. Therefore the courts have held that in order to protect the company in its constitutional rights, injunctions must be issued at the outset to stay the enforcement of the rates. This right to equitable relief is now firmly established. Thus we find the Supreme Court approving a decree of injunction issued by a circuit court to restrain the enforcement of rates made by a state commission, although the state law declared that the rates should be in force pending judicial review. Indeed, we find the court going even farther. In *Chicago, Milwaukee and St. Paul Ry. Co. v. Tompkins*,²⁰ a temporary injunction was issued at the outset, but after a thorough trial the lower court declared the rates to be reasonable and denied a perpetual injunction. Upon appeal, however, the Supreme Court directed that the restraining order be continued pending a final decision of the case. This illustrates how zealous the court is in protecting the constitutional rights of the railroads. In view of the *dicta* and the practice of the court, it may be asserted with some confidence that a statute denying the temporary injunction in rate cases would be

²⁰176 U. S. 187.

overthrown by the court on the ground that, in effect, it prevented the courts from protecting the railroads in their constitutional rights. Nevertheless, it is to be regretted that the action, or inaction, of Congress has prevented a definite determination of this very important question.

6. *Penalties.*—The penal provisions connected with the rate-making power may be disposed of in a few words. They provide for punishment by fine only. "Any carrier, any officer, representative or agent of a carrier, or any receiver, trustee, lessee, or agent of either of them, who knowingly fails or neglects" to obey the commission's orders establishing rates, "shall forfeit to the United States the sum of five thousand dollars for each offense," and each day of violation is to be regarded as a separate offense.

In concluding this discussion of the amended Interstate Commerce Act, one question of a general nature must be briefly considered. In so far as the act pertains to the regulation of rates by the commission, how effective will it probably be? How well does it equip the commission with powers necessary for the successful control, in the public interest, of railroad charges? The answer to these queries must be the confession that, while the act will doubtless improve existing transportation conditions, it will in all probability prove but moderately effective. It is not in all respects thoroughly adequate. The review given above discloses several weak points. The commission will doubtless be embarrassed by its lack of authority over transportation exclusively by water, by the requirement of a formal complaint in all cases, by its inability to fix a minimum rate, and by the numerous serious difficulties incident to judicial review. In addition, a further obstacle may be found in the failure of the act to confer any right of control over the classification of freight. Two of these defects are probably inevitable under our constitutional system, but, even aside from them, the act is below the standard which might have been attained. Experience, however, will show better than present analysis the respects in which the act must be altered or strengthened before the commission can reach its maximum efficiency. For the present the reflection is possible that, whatever the achievements of the commission may be, the passage of the act has already been justified, for the large number of reductions in rates which have been voluntarily made by the railroads gives evidence that the enactment of the law has not been in vain.

PRUSSIAN RAILWAY ADMINISTRATION

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The development of the Prussian railway system may be summarized as follows:

I. The period of early railway building and state aid extended from 1835 to 1849, during which there were no state railroads. The first general law regulating Prussian railways was passed in 1838—comprehensive and detailed, providing for strict governmental *control*. From 1843 to 1849 the state assisted various private railways by guaranteeing a minimum interest to takers of stock, reserving to itself the right to take over the lines if the companies proved unable to profitably operate them.

II. The first period of state railroads lasted from 1850 to 1880, during which private and public lines were co-existent. The first state railroad, constructed for military reasons, was opened in 1850, and at the end of that year amounted to 54 miles in length. By 1880 Prussia had built 5,350 kilometers and had taken over of private lines 700 kilometers—less than 435 miles. From 1862 to 1878 was a period of speculation and general railway development, during which many new railroads were projected.

III. State railways predominant, 1880 to the present time. In 1878 a definite policy of nationalization for all Prussian railways was inaugurated, including the purchase of existing private lines and the extension of the state railroads. Beginning in 1880, by 1886 the state had acquired about 12,800 kilometers and had built 2,000 kilometers¹ more. Since that date, and up to April 1, 1905, it has built 10,000 kilometers and bought or secured by lease 3,300 more. Only in the years 1887, 1890, 1893, 1895, 1897 and 1903 did it acquire more than 100 kilos a year, while during the same period it has constructed from 300 to 680 kilos annually.² In 1895 the

¹A kilometer is .6214 of a mile.

²Geschäftliche Nachrichten für den Bereich den vereinigten preussischen und hessischen Staatseisenbahnen, Teil I. Berlin. 1906, pp. 19, 20.

state administrative system was reorganized, simplified and centralized, and in 1897 the Hessian railways—somewhat less than 600 miles—were incorporated in the Prussian system, which also operates the imperial lines in Alsace-Lorraine. From 1850 to 1880 the state built, during the next six years bought, and from 1887 to the present time built again, mainly. At the present time, more than nine-tenths of the railway mileage of Prussia is owned and operated by the government.

Classification of Prussian Railways.

The law of 1838 classified Prussian railways under two heads:

(1) Main lines (*Hauptbahnen*)—standard gauge, important roads, nearly equivalent to our “trunk lines.”

(2) Branch or feeder lines (*Nebenbahnen*), also of standard gauge, of secondary importance, yet a part of the general railway net. There is no intrinsic difference between the two classes as far as track, roadbed, etc., are concerned. Fewer and slower trains, less mail, etc., are the signs of difference in traffic importance rather than in essential equipment.

A later law—that of 1892—made three additional classes:

(3) Local railways or “light railways” (*Kleinbahnen*), which serve local rather than through traffic, and correspond roughly to American suburban or interurban railroads, operated usually by steam. These are held to be no part of the general traffic system and are subject to different regulations from (1) or (2). We may, therefore, omit “*Kleinbahnen*” from this account of the general Prussian railway service, noting only that if a light railway attains sufficient importance it may be transferred into the class of branch railroads (2), becoming an integral part of the general system.

(4) Small private feeder branches (*Anschlussbahnen*).

(5) Isolated private roads, not operated by locomotives, are of still less importance, and have no part in the discussion of the public traffic system. We may, therefore, confine our attention to the two main classes first enumerated and from an American viewpoint class them, for many purposes, as one.

There are 21,017 miles (33,822 kilometers) of railway (main and branch lines, standard gauge) operated by the Prussian state; and 1,477 miles of standard gauge railroad operated by private

companies, of which 265 are classed as main line (*Hauptbahnen*).³ Most of this lies in Prussia, except the Hessian roads and the imperial lines in Alsace-Lorraine—some 2,500 miles, operated by Prussia. During the year 1904-5 the state built or completed 314 miles of track and purchased 34 miles. By April 1, 1907, from the budget estimates,⁴ there will be 35,107 kilos of standard state railway in operation—21,816 miles, besides 150 miles of narrow gauge state railway.

This large mileage, three-fifths of all Germany's and twice the size of the Pennsylvania System, is operated by the Prussian Minister of Public Works and his railway administration, consideration of which naturally falls under four heads:

I. Control of the Prussian railways by the Imperial Government.

II. The Minister and the system of Directories.

III. The Advisory Councils.

IV. Other administrative bodies.

I. *Imperial Supervision.*

It may be well to recall at the outset that Prussia, the largest and most populous of the states of Germany, is not coextensive with the empire. Above Prussia, Bavaria, Baden, Saxony, and the smaller states stands the German "Reich"—and the control of the Prussian state railways by the imperial governments merits a brief consideration. If we imagine the State of New York to own and operate the railways within its borders, and to operate by lease those in Connecticut and Rhode Island also, we have a situation roughly corresponding to that in Germany, where Prussia not only owns and operates 18,000 miles of railways within its own borders,

³The mileage April 1, 1905, was divided as follows:

1. Standard gauge state railways	33,822 kilometers
2. Narrow gauge state railways	250 "
3. Anschlussbahnen (state railways) standard and narrow gauge	401 "
4. Private railways, standard gauge, main and branch lines	2,377 "
5. Private railways, narrow gauge	332 "
6. Local railways (private <i>kleinbahnen</i>)	7,178 "
7. Street railways (<i>strassenbahnen</i>)	2,349 "

Bericht über die Ergebnisse des Betriebes der vereinigten preussischen und hessischen Staatsseisenbahnen, 1904-5. Berlin, 1905, pp 1-4. Also, *Geschäftliche Nachrichten*, 1906, pp. 8, 14, 15.

⁴*Geschäftliche Nachrichten*, 1906, p. 8

but manages also as part of its system the railroads in Alsace-Lorraine and Hesse—over 2,500 miles more.

By the imperial constitution adopted in 1871, the empire has the right of control and legislation on the subject of railways.⁵ It may build railroads through any state, even against the opposition of that state.⁶ (As a matter of fact, it has never exercised this right, but has left the construction and operation of railways to the various states.) Further, under Article XLII, the federal government binds itself to cause the German railways to be managed in the interest of the general traffic, as a single system, with uniform standards for new lines. Regulations for the operation of the roads shall be uniform, rolling stock shall be amply furnished to meet the demands of traffic;⁷ time tables, freight trains and direct transfers of goods are provided for,⁸ and, most important, the federal government reserves the right to control the tariffs,⁹ and to unify and reduce rates on all German railways.⁹ In times of flood or famine, railways shall carry grain, flour, potatoes and other provisions at reduced rates.¹⁰ And finally, for military purposes, they are to meet any demand of the federal authorities for the use of the railways for the national defense; and troops and war munitions are to be transported at uniformly reduced rates.¹¹

Constitutionally, therefore, the empire may exercise a wide control over all the railways, state or private, in behalf of the general economic welfare and for the military defense of Germany. In actual operation, this control is potential rather than actively exerted. The imperial railway office (*Reichseisenbahnamt*), at Berlin, receives reports from the railway directories of the several states, as to stretches of new track opened, new stations, changes in tariffs, etc.; it has the right to demand information of any railway or railway division, and to investigate it personally. Certain regulations besides, particularly as to branch lines (*Nebenbahnen*), must be approved by the imperial railway office. Its influence is further exerted to secure on all the German railroads unity of regulations and rates.

⁵Art. IV, 8.

⁶Art. XLI.

⁷Art. XLIII.

⁸Art. XLIV.

⁹Art. XLV.

¹⁰Art. XLVI.

¹¹Art. XLVII.

II. *The Directories.*

The administration of the 21,000 miles of Prussian railway lines, out of a total of 32,000 in all Germany, is in the hands of (1) the Prussian Minister of Public Works, (2) the Royal Railway Directories, assisted by (3) certain Advisory Councils. It will not be necessary to discuss the system prior to 1895, when it was entirely reorganized, simplified and centralized.

At the head of the system stands the Minister of Public Works,¹² with an important undersecretary¹³ and a staff divided into departments¹⁴ of construction (*Bauabteilung*), traffic (*Verkehrs-*), management (*Verwaltung-*), and finance. General administrative oversight of the whole Prussian system—private as well as state railroads—is the duty of the minister's office. All special export tariffs and through rates are subject to his assent; commodity rates likewise; and both new rates and the changing of old ones must be approved by him.¹⁵

In the hands of the Royal Railway Directories, however, lies the actual fixing and adjusting of rates, freight and passenger, and administrative questions in general. Of these there are twenty-one, one having been added at the time of the incorporation of the Hessian railways with the Prussian system. They are located with centers as follows: Altona, Berlin, Breslau, Bromberg, Cassell, Cologne, Danzig, Elberfeld, Erfurt, Essen, Frankfurt-on-the-Main, Halle, Hanover, Kattowitz, Königsberg, Magdeburg, Mainz, Münster, Posen, St. Johann-Saarbrücken, and Stettin.

Each directory is a board of directors, having under its control all matters pertaining to the stretch of track within its jurisdiction. The directorate corresponds roughly to the division on the American railway. One directory may manage more mileage than another, depending on the density of traffic. The Berlin directory, for example, manages only 577 kilometers (in 1905), while that of Königsberg directs 2,276 kilometers of track, and Halle 1,970 kilometers.¹⁶

At the head of the directory is a president: two alternates, an

¹²In 1906, Herr Budde.

¹³In 1906, Herr Fleck.

¹⁴Universal Directory of Ry. Officials, London, 1904.

¹⁵Sammlung von Vorschriften betreffend die Gütertariffe. Berlin, 1902, pp. 26, 27.

¹⁶Geschäftliche Nachrichten, Teil I. Berlin, 1906, p. 11.

Oberregierungsath and an Oberbaurath, are chosen from the members to preside in the absence of the president.

The directory is most important. Here is lodged the responsibility of fixing and altering normal freight rates and passenger fares, commodity rates, preferential tariffs, export rates, changes in freight classification, and the whole administrative work of the division. Subject to control indeed by the minister, and assisted by advisory councils, the directories are the centers of the Prussian railway system.

Subordinate to each directory are four offices or sub-departments (Inspektionen), which have charge of the actual local management: (1) for traffic (Verkehr), (2) operation (Betrieb), (3) technical matters (Maschinen), and (4) machine shops (Werkstätten).¹⁷ They are controlled by rather definite rules and regulations, only the directories having large discretionary power. The directorate at Altona, with a board of seventeen members, has thirteen operating managers, six machine "inspectors," four managers of machine shops, and five traffic managers. Berlin, with a directory numbering twenty-five, has nine in the operating department, two for "machines," eight for shops, and four traffic managers. And so they vary with the needs of the varying branches of the service. The duties of the machine shop and technical-mechanical (Maschinen) inspectorships hardly require explanation. The work of the traffic manager is to bring the public in his district into close touch with the railways, while the operating managers have charge of the running of trains, the maintenance of way, and track inspection.

Besides these four departments there are special construction offices (Bau-abteilungen) created by the Minister of Public Works when needed, for the overseeing of extensive track-building operations, sometimes independent of the directories, sometimes closely connected with them, but usually with duties carefully laid down by law.¹⁸ The telegraph department, formerly classed as one of the Inspektionen, was abolished April 1, 1902, its work being merged partly in the general supervision of the directory, partly in the operating department.¹⁹

Each directory has its central office, with clerks, treasurer, and

¹⁷Bericht über die Ergebnisse des Betriebes der vereinigten preussischen und hessischen Staatsbahnen, 1904. Berlin, 1905, p. 12.

¹⁸Sonderabdruck aus Archiv für Eisenbahnwesen, 1905, pp. 313, 320.

¹⁹Geschäftliche Nachrichten, 1906, p. 30.

its own bookkeeping department. The methods of keeping accounts were much simplified by the reorganization in 1895, the amount of statistics required lessened, and the number of clerks reduced, effecting a saving of nearly \$5,000,000 a year.²⁰

Besides the strictly divisional duties of each directory—those pertaining to its own territory—certain general matters affecting the whole Prussian service are in charge of particular directories. The office at Magdeburg, for example, has charge of the car distribution for all Prussia; another directory controls the ordering of rolling stock; others the purchase of roadbed materials, rails, ties, etc.; workshop supplies; accounting and auditing for the general service; and the appointment of minor officials. There are, besides, made up from various directories, special committees on technical questions, such as locomotives, passenger coaches, brakes, telegraph and block signals.

The directories, then, are the most important and essential part of the Prussian railway administration, possessing, as they do, general control over the fixing and altering of freight rates and passenger fares, commodity rates, preferential tariffs, printing of schedules, entering into agreements with other German railways, etc. It is the directories which co-ordinate the technical and administrative elements so that unity of operation results; and to them is due in no small measure the success of the Prussian railway system.

The Control of Private Railroads.

Railroads owned and operated by private companies, serving public traffic, are also subject to the control of the directories, and require a brief consideration. Private railways in Prussia at the present time are few and of minor importance;²¹ the only one with over 100 miles of track in 1905 was the Prussian Southern Railway, with 150 miles. The Prussian Government at the beginning regulated strictly the construction of all railroads, aiming to prevent the building of unnecessary lines. A company wishing to build through a certain district had to prove to the Minister of Public Works that existing lines were not sufficient; that the proposed road would serve the public interests; and that it was practical and permissible from a military standpoint. Detailed plans of the whole route must

²⁰Collier—Report on Prussian Railways, 1902. (British Diplomatic and Consular Reports, No. 574. Also, Archiv für Eisenbahnwesen, 1905, pp. 326-329.

²¹This does not include local and street railways; only *main lines* and branches.

be submitted, together with the permission of local foresters to traverse tracts of woodland, and the consent of other local authorities. After construction, the state inspected the road, its maintenance, operation and rates, and exercised a far-reaching control. Railways already in existence were protected by the reluctance of the state to grant new charters.

With the almost complete nationalization of the railways, however, state control of private lines has ceased to be an important question: it is interesting only in connection with our American policy toward railroads. In Prussia, interest centers not about public control of private railways, but how best to manage the state-owned lines.

III. *The Advisory Councils.*

Closely associated with the directories, and provided for by law, are certain Advisory Councils—nine Circuit Councils and a National Council, representing the railway shipping interests and bringing into close touch with the railway management those who use it most. The Circuit Council (*Bezirkseisenbahnrat*), composed as it is of representatives of chambers of commerce, boards of trade, lumbermen, millers, foundrymen, dairy associations, iron and steel manufacturers, beet sugar men, etc., etc., knows most intimately the needs of the commercial classes. It may recommend to the directory changes in rates, in classifications of freight, in operating rules, etc., as needed by certain industries or the shipping interests as a whole. These recommendations the directory is bound to carefully consider; it is required by law to consult the council; it may ask its advice on any question connected with the service, and, while not compelled to adopt the council's recommendations, usually gives them most careful consideration.

As there are nine councils and twenty-one directories, one council advises more than one directory. The standing committee of the council hears petitions of shippers, complaints, and first debates thoroughly matters which it later presents to the council.

The National Council (*Landeseisenbahnrat*) bears the same relation to the Minister of Public Works that the circuit council bears to the directory. It consists of forty members, who hold office for three years; ten of them are appointed by the various Prussian state ministers, and thirty are elected by the circuit coun-

cils from residents of the city or province in which the circuit council acts. They represent agricultural, manufacturing, forestry, and trade interests. The national council meets twice a year, and considers general questions, such as the proposed budget, rates, general freight classifications, etc. It submits its report to the Prussian Landtag (Parliament), as well as making recommendations to the Minister of Public Works.

The councils bring railway and shippers together; railway officials learn the needs of shippers, while commercial bodies and shippers understand the railway, its policy and problems.

IV. *Administrative Adjuncts.*

Other bodies which play a more or less important part in determining Prussian railway rates and regulations are:

1. The General Conference of German railways—an imperial body, composed of members representing all the German railways, both state and private. Of 322 members in 1901, apportioned according to mileage, the Prussian state railways had 139 votes, Bavaria 28, Saxony 16, Alsace-Lorraine 11, Baden 10, etc. This conference discusses subjects of interest to all the German railways—not Prussia only—interstate rates, freight bills, etc. It is a voluntary advisory body, and does for Germany as a whole somewhat the same work as the national council does for Prussia.

Subordinate to the General Conference is the *standing commission*, which holds sessions with another subordinate body, the committee of shippers (*Verkehrinteressanten*), and prepares matters for consideration by the conference.

2. The Society of German Railway Managements, which includes more than German railways—those in Holland, Belgium, Roumania, Austria, Hungary, Bosnia, and Russian Poland. Both state and private railroads are eligible. It is concerned chiefly with questions of uniformity. It was instrumental in securing the treaty of Berne (1890), under which it deals with through rates, uniform bills of lading, international routings and customs house regulations.

This, then, is the Prussian system of state railway administration—Advisory Councils, responsible Directorates, a Minister of Public Works, with general oversight. Owned and operated by the state, the railways are managed in accordance with a definite national policy—the economic development of Prussia as a whole, and Ger-

many, the industrial welfare of all parts of the state, and for the military protection and strengthening of the nation.

Labor Conditions.

Toward its employees the policy of the state has been liberal. Pension funds are provided for sick and disabled employees, and for those grown old in the railway service of the state. To these funds every workman contributes, and the administration pays an equal amount. In 1900 the old age pension fund amounted to \$15,000,000. Dwellings also are erected for workmen, who are obliged to live near their work and are unable to obtain houses at a reasonable rate, which are rented to them at a low figure. In 1899, 30,840 such dwellings had been erected out of the funds at ordinary disposal; in 1905, the number had increased to 40,800.²² Moreover, hours of labor are strictly limited for all classes of employees, long continuous unrelieved work being forbidden by law, and the law enforced.

In the 486 machine shops, in addition to the usual work, 2,439 apprentices were being trained (1905) for future service as machinists, repairmen, etc., besides 1,162 apprentices in special machine shops.²³

There were on April 1, 1905, about 400,000 workmen and officials employed on the Prussian state railways.²⁴

Engineering and Technical Results.

Improved passenger coaches are being put on, more like American cars than on other continental roads, with end-doors, wash rooms, vestibules, etc. The Prussian freight cars, always smaller than those in the United States, but larger than those in England, are being increased in size, to hold twenty and thirty tons;²⁵ and steel cars are coming into use.²⁶ Electric traction has been experimented with—a third-rail system. Westinghouse brakes, steam heat and gas lighting for passenger cars, and the adoption of a block signal system indicate that for European railways the Prussian are making good progress. In 1905 there were 32,847 telephones

²²Geschäftliche Nachrichten, 1906, p. 119.

²³Bericht über die Ergebnisse des Betriebes, 1904-05, p. 15.

²⁴Geschäftliche Nachrichten, 1906, p. 118.

²⁵A German ton equals 2,204 pounds.

²⁶Bericht, 1904, p. 23, 1906.

in use in the railway service, of which 5,467 were installed during the preceding twelve months.²⁷

Financial Results.

The capitalization of the Prussian-Hessian system, about \$1,952,750,000 in 1899, amounted in 1905 to \$2,225,000,000,²⁸ about \$105,800 per mile. The average net profits amounted in 1903-4 to 7.12 per cent and in 1904-5 to 7.17 per cent of the capitalization. The excess of earnings over disbursements, which has amounted each year since 1894 to \$100,000,000 or more, is applied, first, to pay the interest on the railway debt; then, except that a small sum (\$500,000) may be used to meet any deficit in the ordinary state budget, the next claim is three-quarters of one per cent of the total railway debt (not the unextinguished portion) for a sinking fund; then, any balance may be invested in new lines or be paid to the government for general expenses. From 1881 to 1899 \$350,000,000 was so turned over to the government. For the year 1904-5 the net profits amounted to \$158,190,000.

General Conclusion.

"The results of the nationalization of the railroads in Prussia have been highly satisfactory," says Prof. Emory R. Johnson,²⁹ "particularly in its financial results." Its success has been due in no small part to the well articulated, flexible and elastic system of administration. A definite head, well defined control and responsibility all the way down from minister to depotmaster, with shippers in close touch with the railway management, result in rates which change with the changing needs of commerce, and in a service adequate for Germany. Preferential rates whenever granted are granted openly, after full and public discussion; there are no secret rebates. Prussia has satisfactorily solved the problem of government ownership. Would the United States be as successful?

²⁷*Geschäftliche Nachrichten*, p. 34.

²⁸*Geschäftliche Nachrichten*, p. 26; 8,902,921,000 marks for standard state railways, besides 17,000,000 marks in narrow gauge, and 12,000,000 in state "Anschlussbahnen" not in the general system. A mark equals 23.8 cents.

²⁹*American Railway Transportation*, p. 342.

Outline of Prussian Railway Administration.

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| <p>I. Minister of Public Works
an
undersecretary and
staff</p> | <p>1. 21 Royal Directories, each direc-
tory having four departments or "in-
spektionen"
2. Construction in the hands of special
appointed by the Minister and usually
under the control of the directory.
3. Certain directories have entire charge
of special work for the whole system—
car distribution, purchase of rails and
ties, accounting, purchase of rolling stock,
appointing minor officials, etc.</p> | <p>(a) Traffic (Verkehr).
(b) Operating (Betrieb).
(c) Technical (Maschinen).
(d) Machine shop (Werkstätte).</p> |
| <p>II. National Advisory Council</p> | <p>Nine Circuit Councils, composed of representatives of commercial bodies, which make recommendations to Directories.</p> | <p>A standing committee of the council prepares matters for its consideration.</p> |
| <p>III. Imperial and International advisory bodies</p> | <p>1. General Conference of German Railways considers interstate matters with the help of its....
2. Society of German Railway Managements considers international traffic questions, under Berne treaty.</p> | <p>(a) Tariff Commission.
(b) Committee of Shippers.</p> |
| <p>IV. Imperial Railway Office at Berlin</p> | <p>Has general supervision over foregoing bodies as far as they affect the German Empire as a whole.</p> | |

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8. Maps of Prussian railway system, 1906, etc. (Übersichtskarte der Verwaltungs-bezirke, etc., 1906.)

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PRUSSIAN RAILWAY RATE-MAKING AND ITS RESULTS

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The State of Prussia has a system of railways more than 21,000 miles (34,130.73 kms.¹) in length, owned and operated by the government. It is the best example of an extensive system of government railways; and ever since 1880, when Prussia actively began the policy of buying up the large private railroads, there has been constant effort to perfect the all-important work of rate-making.

Fundamental differences clearly exist between conditions in the United States and Prussia.² The average length of haul in Prussia is but 70.7 miles, as compared with 244.3 in the United States.³ The average shipment in the United States is very much larger, partly because the Prussian railways not only carry smaller quantities of freight, but in addition they do a parcel business. Furthermore, a large proportion of American freight consists of raw materials, while in Prussia a larger part consists of high-grade manufactured products. Items of income as well as of expense are different in the two countries—wages, building materials, fuel and other of the separate factors commanding different prices. In the passenger business, the denser and lower grade of traffic is a vital difference. Again, the huge area of the United States is in striking contrast with the small and compact area of Prussia. There are, moreover, radical differences in political and governmental conditions in the two countries, that require careful consideration by those who are studying the transportation policies of Prussia and the United States.

Foreign experience in government rate-making must necessarily be viewed with the greatest caution. Yet, though bearing in

¹ Bericht über die Ergebnisse des Betriebs der Vereinigten Preussischen und Hessischen Staatseisenbahnen, p. 6. Figures for March 31, 1905.

² *Ibid.*; Die Verwaltung der Öffentlichen Arbeiten in Preussen, 1890-1900; Prof. W. Lotz, Verkehrsentwicklung in Deutschland; W. C. Noyes, American Railroad Rates, Ch. VIII.

³ Year 1904, the railroads of the United States being considered as one system.
(323)

mind that what Prussia has accomplished does not demonstrate that similar accomplishments could be here attained, it is pertinent, in the face of the rapid extension of government ownership in foreign countries and the occasional waves of agitation in the United States, to analyze the most highly developed system of government rate-making in the world and to study its results.

I. *Rate Administration in Prussia.*⁴

Before 1895 the control over rates and their promulgation was decentralized. The Minister of Public Works was finally responsible, but under him there were eleven railway directorates, who were advised and aided in the immediate making of rates by seventy-five administrative district officials and a commission of private railways. In 1895, however, the administration was reorganized to the great benefit of the Prussian rate system.

The Minister of Public Works is still the final authority. The directorates have, however, been reorganized and their number increased to twenty-one. Distributed over Prussia, each in a given area, they are entrusted with the immediate work of rate-making. But really greater influence over rates than is exercised by the directorates is exerted by the circuit councils or "*Bezirkseisenbahnräthe*." They are boards of legal standing with the duty of thoroughly keeping in touch with commercial and industrial conditions, and of advising the circuit directorates on matters important in rate-making.

These councils (*Bezirkseisenbahnräthe*), now nine in number,⁵ and with a membership consisting of representatives of industrial, commercial and financial organizations, have made it largely possible to bring Prussian rates into conformity with economic needs. There is, also, a national advisory council, similarly constituted and with forty-two members, whose duty it is, at least twice a year, to advise the central administration on matters of rate-making, just as the circuit councils do in the case of the directorates. To still further facilitate rate-making, there are the "general conference,"

⁴ B. H. Meyer, in U. S. Industrial Commission, Vol. IX, p. 911; *Die Verwaltung der Öffentlichen Arbeiten in Preussen* (1901), p. 53; *Die Entwicklung der Gütertarife* (Berlin, 1904), pp. 11-12; W. Hoff, "Zur Wiederkehr des zehnten Jahrestages der Neuordnung der preussischen Staatseisenbahnverwaltung," in the *Archiv für Eisenbahnwesen*, 1905, pp. 307-330.

⁵ *Die Verwaltung*, etc., p. 53 (*Ibid.*).

composed of representatives of all German railroads; the "tariff commission," which is a subordinate part of the general conference and which considers petitions from shippers; and the "committee of shippers" which does much the same work as the tariff commission, but from the standpoint of the public. The Imperial Government, through the "Reichs Eisenbahnamt," retains the constitutional right to control the general policy of rate-making in Prussia, as well as in all other German states.

The Prussian railway officials have long seen that if they wish to avoid a system so rigid as to be fatal to industry, there must be centralization of rate administration, and co-operation between the shippers and all the railroads of Prussia. The result is a centralization of rate-making in the Minister of Public Works, and the district directorates, advised by the legally constituted national and circuit councils, which are bodies designed to secure the industrial and commercial information required for the intelligent adjustment of rates to economic conditions.

II. *The Prussian Freight Rate System.*

A mistaken idea has been fostered by many persons that Prussian freight tariffs have of necessity been reduced to a rigid distance basis; and that they have approached simplicity itself because a yard-stick, instead of industrial conditions and human judgment, has seemingly been the determining factor. It is true that the schedules are somewhat simpler than those in the United States, largely because a small and compact country permits greater simplicity, but nothing is more fallacious than the notion that distance is the sole factor, and that industrial and commercial needs are disregarded. If any generalization is permissible, it is that distance receives greater and commercial needs slightly less attention than are accorded them in the United States.

*The Normal Freight Schedules.*⁶—The class rate schedules of Prussia, constituting the simplest part of the freight tariff system, are given in the following table:

⁶Sammlung von Vorschriften betreffend die Gütertarife (1902), p. 10.

Normal Freight Transportation Charge.

DISTANCES.	LESS THAN CAR-LOAD LOTS.				CAR-LOAD LOTS.					
	Fast Freight.		Slow Freight.		General.		Special.			
	General Fast Fggt.	Special Fast Fggt.	General Slow Fggt.	Special Slow Fggt.	A ₁	B	A ₂	I	II	III
	Rates in Pfennig per Kilometer.									
1 to 50 km.....	22	11								....
51 to 200 km.....	20	10								....
201 to 300 km.....	18	9								....
301 to 400 km.....	16	8								....
401 to 500 km.....	14	7								....
Over 500 km.....	12	6								....
All distances										
1 to 100 km.....				8 ^a	6.7	6	5	4.5	3.5	2.6
Over 100 km.....										2.2
Dispatch Charge in Pfennig per 100 kilograms.										
1 to 10 km.....	20		10		8					
11 to 20 km.....	22		11		9					
21 to 30 km.....	24		12		10					
31 to 40 km.....	26		13		11					
41 to 50 km.....	28		14		12					
51 to 60 km.....	30		15		12					
61 to 70 km.....	32		16		12					
71 to 80 km.....	34		17		12					
81 to 90 km.....	36		18		12			9	9	9
91 to 100 km.....	38		19		12					
Over 100 km.....	40		20		12		12	12	12	12

Separate classifications are made for piece goods ("Stückgutklassen") and carload lots ("Wagenladungsklassen"). Class rates are divided into fast freight or express rates and slow freight rates. Fast freight rates are again divided into a general fast freight class and a special class for specified freight, such as bees, bread, butter, fish, clams, vegetables, milk, fresh berries and plants.^a Slow freight for less than carload lots is also divided into a general class and a special class for specified piece goods, already containing twenty-eight large specifications and many subdivisions, such as given kinds of foodstuffs and fodder, wood and woodenware, metal and metal wares, seeds, roofing, etc.^b The classification for carload lots is divided into two general classes and three special ("spezialtarife"). General class A₁ indicates the rates for general freight weighing less than 10,000 but more than 5,000 kilograms; and

^a Over 726 km. as in general slow freight.

^b Deutscher Eisenbahn Gütertarife, Teil I, Abteilung B, (1906).

^c Eisenbahn-gütertarif, Teil I, Abteilung B, pp. 25-27 (1906).

class B indicates the rate for general freight weighing at least 10,000 kilograms. The "spezialtarife" are more complicated, each indicating the special carload rate on some specified commodity. Twenty-eight pages¹⁰ of the German tariff schedule for 1906 are given to the enumeration of the commodities coming within classes I, II and III. Generally, class I includes raw products, class II intermediate products and class III manufactured products; but there are many exceptions to this, and products are at times shifted from one class to another. "Spezialtarif" A2 covers freight in special tariffs I and II, when the weight is at least 5,000 but less than 10,000 kilograms. Goods in class III, with weight less than 10,000 but over 5,000 kilograms, come within special tariff II.

As the table indicates, the freight charge for goods carried under the normal class rates consists of two items: (1) A transportation charge for the actual carrying of the freight, and (2) a dispatch fee as a terminal charge. For less than carload lots of special fast freight and general freight, the transportation charge is the same,—decreasing from 11 pfennig per metric ton kilometer for the first 50 kilometers (3.8 cents per short ton mile) to 6 pfennig for all distances over 500 kilometers (2.076 cents per ton mile). For example, if special fast freight or general slow freight is shipped a distance of 400 kilometers, it pays a rate of 11 pfennig per metric ton kilometer for the first 50 kilometers, 10 for the next 150, 9 for the next 100, and 8 pfennig for the last 100 kilometers. General fast freight pays just twice this transportation charge. The rate for special slow freight is 2.76 cents per ton mile for any distance up to 726 kilometers, and then it becomes the same as the rate on general slow freight. The rates for carload lots A1 and B are 2.3 and 2.07 cents, respectively, per ton mile for all distances; those for special classes A2, I and II are 1.7, 1.55 and 1.21 cents, respectively, per ton mile for distances up to 100 kilometers, and .76 cents per ton mile for all distances thereafter. The dispatch fees are, also, graded according to distance up to 100 kilometers. Carload lot A1 and all less than carload lots except general fast freight, pay the same terminal charges; general fast freight pays double this; class B pays a charge which remains unchanged for distances over 50 kilometers; and all the special carload classes are given identical dispatch fees.

¹⁰*Ibid.*, pp. 28-56.

The Live Stock Tariff.—The German government publishes a separate schedule of rates applicable to live stock.¹¹ The option is given to the shipper either to pay his rate on the basis of number of animals shipped, or of floor space occupied. On the basis of numbers, the rate varies according to distance, size and kind of animals, total number, and kind of car and train selected. On the basis of floor space occupied, the rate is per square meter and varies according to distance, size and kind of animals, kind of car and train selected, and for some animals, such as horses, is different east than west of a line drawn through Leipzig and Halle. In every instance there is a dispatch fee in addition to the transportation rate.

The "Ausnahmstarife."—Sixty-three per cent of the Prussian traffic does not, however, come within the classified schedules, but under special commodity rates or "ausnahmstarife." The practice of giving exception rates to selected commodities is the most striking part of the Prussian railroad rate system. Professor W. E. Lotz aptly calls it a kind of "Merkantelsystem."¹² With the deliberate purpose of regulating industry and commerce through the powerful medium of freight rates, sixty-three per cent of the traffic is given rates generally about one-half as high as the classified rates and seemingly unusually low as compared with the rates enforced in neighboring countries. The rates are given to build up particular industries, to promote specified districts, to protect German railroads against foreign railways and waterways, to overcome emergencies, to build up German seaports, to promote the German export trade and to discourage the entrance of specified imports.¹³

To build up the shipbuilding industry, iron and steel is given an exception rate from producing points to the shipyards. Exception rates on many raw materials and on fertilizers are granted to aid agriculture. Fuel receives a low rate to foster manufacturing in particular and all industry in general. A special rate is given

¹¹ *Deutscher Eisenbahn-Tariftarif*, Teil I, April, 1906. See also, British Diplomatic and Consular Rept. No. 574, Misc. Series,—Report of Prussian Rys, (1902).

¹² *Verkehrsentwicklung in Deutschland*, p. 66.

¹³ *Die Verwalten der Öffentlichen Arbeiten in Preussen*, pp. 272-301; *Ergebnisse des Betriebs der Preussischen und Hessischen Staatsbahnen* (1904), p. 168; *Die Entwicklung der Gütertarife der Preussisch-Hessischen Staatsbahnen*, Berlin, 1904, p. 15; Solomon Huebner, *Annals American Academy*, Nov., 1904, Promotion of Commerce in Germany; British Rept. on Prussian Rys. (1902), p. 15; Wienenfeld; *Die Nordwesteuropäischen Welthäfen*, pp. 332-3; Lotz; *Verkehrsentwicklung in Deutschland* (1900), p. 64.

to cotton from German harbors to Silesia in order to build up the textile trades of Silesia.

To promote particular districts, coal, coke and briquettes from Westphalia to Hamburg and ports on the Weser are given lower rates, so as to counteract foreign competition at these ports and to develop Westphalia. Likewise, coal for steamers from Upper Westphalia to Danzig, East and West Prussia and Pomerania receives a lower rate. A typical instance of "ausnahmstarife," to draw traffic from foreign railways and waterways to Prussian railways, is the low rate on sugar from points in Russian Poland to Danzig and Königsburg, so as to prevent the sugar from going via Libau, Russia. Likewise, the low rates on hemp, flax, etc., from Russia to Germany, on cotton from Russian points to German harbors, and on petroleum from Roumania to Germany are typical instances. Emergency rates have, also, been occasionally granted. In 1891 special rates on grain were promulgated for long distances because of a crop failure; in 1893 a crop failure induced a special rate on straw and fodder; in the winter of 1898-9 an emergency rate on potatoes was granted to East Prussia; and in 1899 a special rate was made on all food and fodder destined to the Speerwald.

More frequent are the "ausnahmstarife" designed to build up German harbors. Prussia has granted preferential rates to Hamburg and Bremen so as to protect them against the harbors of Northwest and Southwest Europe, even at the expense of Prussian harbors. Preferential rates are granted on cotton, tobacco, fish, coffee, rice and other products in the trade between the German coast and the Rhine-Westphalia district so as to draw trade from the ports of Holland and Belgium.¹⁴ Similar rates are enforced on numerous commodities which are sent to Austro-Hungary, Russia and Roumania over German railways. In the aggregate all these rates aim to build up the German North Sea harbors at the expense of Dutch Belgian, Russian Black Sea and Austro-Hungarian ports.

Closely allied to these preferential rates and even more numerous are the rates designed to conform with the German tariff policy, in order to regulate exports and imports. The Levant and East African "ausnahmstarife" give rates from one-third to one-fifth as high as British rates from interior points to Piræus, Salonica,

¹⁴ *Annals American Academy*, Nov., 1904, Solomon Huebner, p. 106; Wiedenfeld, *Die Nordwesteuropäische Weidhåfen*, p. 322.

Constantinople, Odessa, Alexandria and numerous other places in the Levant, East Africa and points on Oriental and East African railroads. Likewise, to meet Austro-Hungarian sugar competition, preferential rates are given to sugar sent to Switzerland; to promote exports of corn, rape seed, malt, milk produce, etc., an export rate is granted to all nations, except Russia, bordering on Germany; export rates are enforced on brown coal and railway and tramway rolling stock to Roumania, on pig iron from Upper Silesia, Westphalia and Nassau to Austria, on various specified classes of iron and steel destined to foreign countries and German colonies, so as to meet the competition of Great Britain, and on liquor and spirits to Switzerland and France, iron and steel to Denmark and Russia, iron ore to Bohemia, cotton to Russia and starch to Italy. These are the main examples of how the Prussian government is employing its railroads to foster her export trade. A typical instance of the attempt to bar specified imports is the merely normal rate, from seaports to the interior, on agricultural produce which competes with German farmers, as contrasted with the reduced rates of agricultural produce within Germany so as to foster the German agricultural industries.¹⁵

III. *The System of Passenger Fares.*¹⁶

The general schedule of passenger fares which was enforced on Prussian state railways before October, 1906, is given in the following table:

*Normal Passenger Schedule.*¹⁷

	In Pfennig per Person—Kilometer.			
	I Class.	II Class.	III Class.	IV Class.
One-way tickets—express train.....	9.0	6.67	4.67	..
One-way tickets—passenger train	8.0	6.0	4.0	2.0
Return tickets	6.0	4.5	3.0	..
Sunday tickets	4.0	3.2	2.0	..
Summer and tourist tickets	6.0	4.5	3.0	..
Season tickets	6.3	4.67	3.27	..
Workmen's tickets .....	..	..	..	1.0

Baggage to the extent of 25 kilograms is permitted to go free in classes I, II and III.

¹⁵ Lotz, p. 66.

¹⁶ Verwaltung der Öffentlichen Arbeiten in Preussen, p. 54; Johnson, *American Railway Transp.*, p. 296; Denkschrift über die Reform der Personen und Gepäcktarife, by the Minister of Public Works (1905), pp. 14-23.

¹⁷ Die Verwaltung der Öffentlichen Arbeiten, p. 54.

There are four classes of passenger service for ordinary passenger, and three for express trains, and fares ranged respectively from 3.0 to 0.77 cents per mile and from 3.45 to 1.79 cents per mile. Return tickets were reduced to $1\frac{1}{2}$ times the one-way tickets, and workmen could travel for .38 cents per mile on special fourth-class tickets. Many exceptions were made to the regular passenger fares. Children below four years of age could travel free of charge and those below ten years for half the regular fare. School children, Sunday travelers, summer tourists, groups of persons, holders of season tickets, visitors of educational institutions and bathing establishments, invalids who have been in war, German soldiers, and inmates of hospitals and institutions for sick, blind, deaf and dumb and orphans were given special fares. With all tickets in the first three classes 25 kilograms of baggage were carried free of charge.

In 1906 several changes went into effect. Return tickets were abolished; but, to compensate for this, one-way fares in II and III class service on ordinary accommodation trains were reduced to the fares which were formerly granted on return tickets. Fares in class I were reduced to 7 pfennig and in class IV remained unchanged. Instead of a separate schedule of fares for fast trains, a fixed difference was established between fast and slow trains, and baggage to the extent of 25 kilograms is no longer carried free of charge. With these alterations, the above schedule is now enforced on Prussian railways. The changes were primarily influenced by the tax which in Prussia is levied on passenger tickets.

A separate schedule of fares is provided for the Berlin Circle Railway and suburban traffic.¹⁸ In case of the Circle Railway traffic, a fare of 15 pfennig II class and 10 pfennig III class is charged for any distance up to five stations, and double this fare is charged for greater distances. In the suburban traffic 15 pfennig II class and 10 pfennig III class is charged for distances of from 1 to 7.5 kilometers, double this for distances of from 7.6 to 15 kilometers, and treble it for distances of from 15.1 to 20 kilometers. For distances greater than this, 4.5 pfennig are added in class II and 3 pfennig in class III. With one exception, only second and third class service is given in this Berlin city and suburban traffic.

The fares on the Hamburg-Altonaer Railway,¹⁹ like the Berlin

¹⁸ Verwaltung der Öffentlichen Arbeiten, p. 57.

¹⁹ *Ibid.*, pp. 57-58.

Circle Railway fares, are on the two-zone basis, but with three, instead of two, classes of service. For distances not exceeding 4 kilometers the fares are 20 pfennig I class, 15 pfennig II class and 10 pfennig III class. For greater distances the fares are 35 pfennig I class, 20 pfennig II class and 15 pfennig III class. The result on both the Berlin and Hamburg-Altonaer railways is a schedule of fares at once more uniform and lower than the normal fares on Prussian railways.

IV. *Results, Comparisons and Conclusions.*

When the Prussian policy of state railroads was inaugurated it was officially declared that the railways were to be so managed (1) that the people were to obtain a railroad system which would lead to industrial development, and (2) that the finances of the state were not thereby to be impaired.²⁰ In the management of the roads it was, furthermore, the original intention of Chancellor Bismarck (1) that while the system was being built and enlarged the railroads were to be operated for profits, just as a private enterprise, (2) that as this was being completed the rates were to gradually approach the cost of transportation, and (3) that finally the rates were to be merely sufficient to meet the cost of transportation and were to be established into fixed schedules.²¹ During the development of the Prussian rate system the policy of the administration has been changed, and it has been found advisable and practicable to fulfil some of these declarations and to discard others. Prussian rate-making has its flaws as well as its virtues.

The Movement of Freight Rates.—Since the widespread introduction of state management, freight rates have followed a downward course. Reductions have been made both in the classifications and in the rates themselves. Many new items have been added to the classifications and large reductions have been obtained by shifting articles from higher to lower classes. In this way a reduction of 25 per cent has been secured since 1877 in the case of articles shifted from class B to special tariff I, 42 per cent in changes from class B to II, as much as 63 per cent in changes from class B to III, 22 per cent in shifts from class I to II, as much as 51 per cent in changes from class I to III, and from 26 to 37 per cent reduction

²⁰ Die Entwicklung der Gütertarife (Berlin, 1904), pp. 1-6.

²¹ Prof. Lotz, pp. 57-58.

in changes from class II to III.²² The extent to which reductions have been made by placing general package freight into special classes is seen in the increase in the number of special tariff items. In 1878 the "spezialtarife" embraced 160 items, but by 1904 this had increased to 364.

The greatest activity of the administration has, however, been in the enlargement of the traffic shipped under "ausnahmstarife." Marked reductions have been made in this way. From 1879 to 1903 coal shipped from the Ruhr district has had rate reductions amounting to from 10.4 to 26 per cent; coal shipped from Upper Silesia, likewise, has witnessed reductions of from 9.7 to 42.2 per cent, from Lower Silesia of from 5.0 to 25.2 per cent, and from the Sahr district of from 8 to 27 per cent. Rates on iron ore shipped between specified points have been reduced by from 33 to 44 per cent, rates on pig iron by from 10 to 35 per cent, on potassium salt, since 1882, by from 29 to 47 per cent, and on fertilizing lime by from 40 to 53 per cent.²³

Rate comparisons are at best misleading, and charges per ton mile make such comparisons even more questionable. Comparing, however, the Prussian per ton mile charge with those of neighboring countries, it is found that in 1902 the charge in Prussia was 1.238²⁴ cents, in France 1.33, in Austria 1.26 and in Hungary 1.24 cents.²⁵ For the same year the charge per ton mile in the United States was .76²⁶ cents. Though this marked difference between Prussian and American rates is made misleading by the prevalence of bulky freight and long distances in the United States, yet not even the German officials deny that American freight rates are generally lower.²⁷ The somewhat lower rates in Prussia than in the surrounding countries, of more like economic conditions, is, however, indicative of the progress made by the Prussian state railroads. Likewise, the fact that "on the Prussian private roads much higher, often very much higher, normal rates"²⁸ are enforced than on the Prussian state railroads and that the rate per ton per kilometer is slightly higher on the government roads of neighboring

²² Die Entwicklung der Gütertarife (Berlin, 1904), p. 14.

²³ *Ibid.*, pp. 18-20.

²⁴ *Ibid.*, p. 22.

²⁵ H. T. Newcomb, *Railway Rate Regulation in Foreign Countries*, p. 81.

²⁶ .78 cents in 1904.

²⁷ *Entwicklung der Gütertarife*, p. 28.

²⁸ *Ibid.*, p. 22.

German states are again indications that the Prussian state railroad rates are low as compared with the rates of other European railroads.²⁹

The Movement of Passenger Fares.—On the one hand, while Prussian freight rates are higher than American freight rates, Prussian passenger fares are distinctly lower. The average fare per passenger mile in the United States is 2.006 cents, while in Prussia it is but .93 cents.³⁰ This great difference is partly because out of the 8,343,651,715 person kilometers³¹ of Prussian travel in 1904, 7,875,546,842 were within the two lower classes, partly because of the multitude of special fares, and partly because the Prussian figure includes a large amount of suburban travel which in the United States is handled by street car companies.³²

On the other hand, while Prussian freight rates are steadily declining the passenger fares in the general schedules do not decline as rapidly. The earnings per passenger mile decrease, but it is due largely to the special fares and the increased travel in the lower classes—not to a reduction of the general fares. In consequence of this, in spite of the low general level, there is not the same contentment as in the case of freight rates. The situation has, perhaps, been somewhat changed by the reform of 1906.³³

Industrial and Commercial Results.—In the United States the predominating forces in the determination of freight rates have been commercial and industrial. Many persons, blinded by the presence of political, social, educational and military motives and the element of distance which have influenced the policy of Prussian rate-making, have been led to believe that freight rates in Prussia retard the growth of industrial and commercial interests. Pages of scholastic indictment have been written against the prevalence of distance considerations. But such charges hold only to a limited extent. Distance and mechanical uniformity are over-important only in case of the classified schedules, and that is why the normal schedules are the weakest part of the Prussian rate system. Freight shipped under these rates occasionally finds difficulty in going to

²⁹ Russian rates are excepted, because of the great preponderance of long-distance hauls

³⁰ *Ergebnisse des Betriebs*, etc. (1904), p. 45.

³¹ *Ibid.*, p. 43.

³² Prof. E. R. Johnson, *American Railway Transportation*, p. 296.

³³ Lotz, p. 69; also, *Denkschrift über die Reform der Personen und Gepäcktarife* (1905).

distant markets; and yet it must be borne in mind that the effect of distance considerations in a small and compact country such as Germany cannot be judged by the probable effect they might have in shipments from Chicago to New York. The far greater importance of distance in the normal tariffs of Prussia than even in the class rates of the American trunk line district causes them to yield less readily to commercial demands; but they are not "iron-clad." This is due to the constant watchfulness of the twenty-one railroad directorates, the nine circuit councils, the "landeseisenbahnrat," the general conference, tariff commission of railways and the committee of shippers. These destroy much of the rigidity which would otherwise prevail.

Chancellor Bismarck's plan to reduce all traffic to a fixed schedule has wisely been abandoned, as the administration soon found it incompatible with the promise to promote industry. The distinct tendency is toward the growing adoption of the "ausnahmstarife." As was shown above, many of these have been promulgated for the special purpose of building up particular industries and business in general. Largely because of the preferential rates the coal traffic in the Ruhr district⁸⁴ was swelled from 20,309,311 to 65,583,430 tons, or by over 223 per cent, in Upper Schlesien by over 183.5 per cent, in Lower Schlesien by over 115 per cent and in the Sahr district by over 124 per cent. Likewise the traffic in German pig iron increased by over 350 per cent,⁸⁵ and in potassium salt by over 549 per cent.⁸⁶ These are examples of the promotion of special industries. That industry in general has not been retarded is shown by the growth of the total Prussian freight traffic from 8,903,091,000 ton kilometers in 1879 to 30,592,390,130 in 1904.⁸⁷

The building up of export trade and North German harbors, while partly influenced by political considerations, has benefited not only Prussia but the industry and commerce of all Germany. Low rates on particular commodities to foreign and colonial markets have stimulated German exports and like a tariff wall have partly protected these industries against foreign competition. Contrary to the original plans of Bismarck, these rates tend to build up large cities; but this has been more at the expense of foreign seaports

⁸⁴ *Entwicklung der Gütertarife*, p. 18.

⁸⁵ *Ibid.*, p. 19.

⁸⁶ *Ibid.*, p. 20.

⁸⁷ *Die Ergebnisse des Betriebs*, etc. (1904), p. 165.

than at the expense of smaller German cities. Whether or not this is advisable, the building up of large cities has been a less marked result of freight rates in Germany than in the United States. It is also true that political influences are present; perhaps this would be fatal to government rate-making in the United States, but in Prussia it has chiefly taken this form of promoting exports, and in so doing has benefited German industry.

The policy of the Prussian government has been to build up river and canal transportation side by side and in co-operation with the state railroads. For example, from 1890 to 1900,³⁸ the state expended 10,831,100 marks for improving the Rhine, 795,000 for the Ems, 401,500 for the Weser, 3,631,100 for the Elbe, 3,403,700 for the Oder, 87,359,700 marks for the construction and improvement of canals, and 31,022,300 marks for the canalization of streams. This promotion of water transportation is not because of any failure of the Prussian railways,³⁹ but because certain state officials believe that canals are desirable for the transportation of bulky products over long distances, and for military purposes. River and canal rates in Germany are generally about one-third as high as railway rates,⁴⁰ largely because of these natural advantages and because they are based upon cost of maintenance, while the railway rates are partly based upon profits. It is the policy of the state to operate both the waterways and the railways, and through their unified activity to promote German industry. Whatever may be the wisdom of this policy, the revival of canal construction does not indicate the industrial and commercial failure of the state railways.

Conflicts of sectional interests sometimes prevent a change of railroad rates to conform strictly with industrial needs, but this is true, also, in the United States. The merchants in Prussia are satisfied with the present rates and their downward tendency as compared with previous rates; and, strange to say, they praise the relative stability of Prussian rates⁴¹ as loudly as many Americans laud the elasticity of American rates. Commercial and industrial

³⁸ *Die Verwaltung der Öffentlichen Arbeiten*, pp. 150-176.

³⁹ Govt. Regulation of Rwy. Rates, B. H. Meyer, in *Jour. of Pol. Econ.*, Feb., 1906.

⁴⁰ *Annals American Academy*, Nov., 1904, p. 104, S. Huebner, *Relation of the Government in Germany to the Promotion of Commerce*.

⁴¹ *Die Entwicklung der Gütertarife*, pp. 12-13.

considerations are not so controlling as in the United States; but, on the other hand, much has already been accomplished by the Prussian state railroads, and whatever is accomplished is done in the light of full publicity and not secretly with private parties. Rebates and personal discriminations are unknown on the Prussian state railways.

Financial and Technical Results.—Financially the Prussian state railroads have been highly successful. The desire of Bismarck ultimately to reduce the rates to a basis of cost has been discarded from the policy of the administration. Freight rates have declined, but with the effect of increasing the profits to the state. In 1905 the passenger service yielded a gross income of 446,335,000 marks, the freight service of 1,073,600,000, and the income from miscellaneous sources was 98,182,000, a total of 1,618,117,000 marks. In the same year the total operating expenses amounted to 983,439,300 marks. There was consequently a surplus of 634,677,700 marks, or over \$151,000,000.⁴² If to the operating expenditure charges for interest, special funds, etc., are added, there was still in 1905 a net profit to the state of over \$120,000,000.⁴³ In 1904 the net profits equaled 7.17 per cent on the total railway capitalization of 8,824,957,896 marks.⁴⁴ Not only has the railway debt been steadily reduced in late years, but large sums have each year been turned into the state treasury to defray general state expenses. If all the railroad profits which have been turned into the state treasury had been used to pay the railroad debt, every cent of the debt would now be paid.⁴⁵ It was feared at first that the nationalization of the railways would endanger the business of the state, but instead the railroads have become a money producing agency based upon the policy that railway rates and fares are more readily paid than an increased rate of taxation.

The reduction of freight rates and the growth of profits have not been at the expense of technical improvements. In the matter of size of cars and trainloads, introduction of steel cars, automatic couplings, tunnels, terminal facilities, and in many other technical matters, the railways of Prussia are inferior to those of America. At the same time, the state railroads of Prussia are making greater

⁴² *Ergebnisse des Betriebs*, etc., 1906, pp. 50-51.

⁴³ B. H. Meyer, *Jour. Pol. Econ.*, Feb., 1906, p. 97.

⁴⁴ *Ergebnisse des Betriebs*, etc., 1904, p. 11.

⁴⁵ Prof. B. H. Meyer in *Jour. Pol. Econ.*, Feb., 1906, p. 96.

progress than other railways of Europe—whether private or state. In 1904, 128,747,348 marks were expended on the increase and maintenance of rolling stock, 177,771,095 on construction and 163,603,919 on general equipment and engines.⁴⁶ Larger engines and cars and better terminal arrangements are being introduced side by side with the reduction of rates and increased profits. Better use is being made of cars by means of telegraphic reports sent from each district to the directorate at Magdeburg, and by agreements permitting the use of foreign cars.⁴⁷ Where traffic is very dense special depots for particular freight are provided, instances of which are the cattle depot and fuel depot at Berlin,⁴⁸ the block signal system is almost universal, as far as possible dwellings are erected by the state for employees, who must live near the railways, refrigerator cars and special fast trains are introduced for perishable goods,⁴⁹ and, as in the United States, second, third, fourth and even fifth tracks are being constructed to avoid congestion of traffic.⁵⁰ As a general rule, these improvements are first introduced by the Prussian state railway, and then are gradually adopted by the private and other state railways of Germany.

The physical, social, political, governmental and economic conditions of Prussia differ from those prevailing in the United States. Prussian experience does not demonstrate the feasibility of government rate-making in America, nor does it demonstrate superiority over the American system of rates made by private railroads under partial government supervision; but, as applied under Prussian conditions, government rate-making has been industrially, commercially, financially and technically successful.

⁴⁶ *Ergebnisse des Betriebs*, etc., p. 33.

⁴⁷ *Ibid.*, p. 62.

⁴⁸ British Rept. on Prussian Railways, pp. 25-26.

⁴⁹ *Verwaltung der Öffentlichen Arbeiten in Preussen* (1901), p. 61.

⁵⁰ *Ibid.*, p. 15. *Ergebnisse des Betriebs* (1904), p. 10.

APPENDIX.

A NEW GERMAN PASSENGER TARIFF.¹

The negotiations among the several states of the German Empire for a uniform passenger tariff, which have been pending some two years, have resulted in an agreement, and the reformed tariff will probably go into effect May 1, 1907. The basis of the new tariff is as follows:

	Class 1.	Class 2.	Class 3.	Class 4.
Pfennige, per kilometer....	7.0	4.5	3.0	2.0
Equals, cents per mile	2.68	1.72	1.15	0.767

The chief obstacle to a uniform tariff was the objection of the South German states to the introduction of the fourth class, and this has not been wholly overcome; for in Bavaria and Baden no fourth class cars are contemplated; but on local trains only the fourth class rate will be charged for third class cars, the rate being known as 3b.

With these rates there will be no reduction for round-trip tickets, and no free baggage. The above rates are for ordinary passenger trains. For express trains there will be an addition, but not as heretofore, an addition of so much per kilometer, but a fixed sum for three zones, namely:

	Kilometers		
	1 to 75.	76 to 150.	More than 150.
Classes 1 and 2.....	0.50 pf.	1.00 mk.	2 mk.
Class 3.....	0.25 "	0.50 pf.	1 "

That is, for distances less than 47 miles, the ticket will cost 6 cents more in the third class and 12 cents more in the higher classes; 47 to 93 miles, 12 cents third and 24 cents first and second; all greater distances, 24 cents third and 48 cents in higher classes. This, it will be seen, is a substantial addition to the fare for short distances; thus, New York to Stamford second class, 54 kilometers, the fare would be 2.33 marks by passenger train and 2.83 by express; to New Rochelle, half as far, the fare is 1.16 marks by passenger train and 1.66 by express; in the first case 21 per cent, in the other 41 per cent more for the fast train. But for great distances the charge for speed is inconsiderable: 24 cents to Philadelphia and only 48 cents for the longest distance for which tickets are issued. The purpose of this, doubtless, is to keep local travel off from long-distance express trains; but it would seem to be disadvantageous for the longer distance suburban trains, such as New York-Morristown, New York-Tarrytown, or New York-Stamford; where a whole train can be filled at either terminus, to the advantage both of carrier and passenger.

What we would call coupon tickets over two or more different lines by the new tariff will cost 0.115 cent more per mile for the first and second class and 0.077 cent more for third class than the tickets over one line; but they have the important advantage that they are good both on passenger

¹ Reprinted by permission, from the Railroad Gazette of February 15, 1907.

and express trains. As comparatively few journeys as long as 300 miles can be made without such tickets, the one mark and two mark additions for express trains for all distances above 93 miles have very much fewer applications than they would have in a country like this. Suburban and holiday tickets, school and workmen's tickets are excepted from the uniform tariff, but most other commutations, such as mileage and book tickets, are prohibited.

There has been heretofore on some (perhaps all) of the roads affected an allowance of 25 kilograms (55 lbs.) free baggage. By the reformed tariff all baggage taken in baggage cars will be charged at the following rates for every 25 kilograms:

Zone.	Marks.	Zone.	Marks.
I to 25 km.	0.20	351 to 400 km.	2.00
26 " 50 "	0.25	401 " 450 "	2.25
51 " 100 "	0.50	451 " 500 "	2.50
101 " 150 "	0.75	501 " 600 "	3.00
151 " 200 "	1.00	601 " 700 "	3.50
201 " 250 "	1.25	701 " 800 "	4.00
251 " 300 "	1.50	More than 800 km. ..	5.00
301 " 350 "	1.75		

That is, for less than 16 miles, 4.8 cents for 55 lbs. or less; anything more than 55 lbs. up to 110 doubles the charge; 16 to 31 miles, 6 cents; then an addition of 4.8 cents for every 31 miles up to 310 miles; 12 cents for every 62 miles up to 500 miles, and for all distances greater than 500 miles \$1.19 per 55 lbs. This makes New York to Philadelphia 18 cents for 55 lbs., 36 cents for 56 to 110 lbs., and 54 cents for the 150 lbs. free baggage allowed on American railroads. New York to Washington or Boston our allowance of free baggage would cost \$1.43; Chicago to Buffalo, \$3.57; but no more from Chicago to New York. These rates are likely to make the passenger think twice before he packs his trunk; which is doubtless desirable. In one country where the matter was investigated, it was found that not one passenger in seven had any baggage for the baggage car, and it is questioned whether the six should be taxed for the benefit of the one who does have baggage; that is, whether they should pay as much as though they had baggage.

In comparing with conditions here, it should be remembered that the free baggage allowance in Germany heretofore has been but 55 lbs. (where there was any), and that the German cars enable the passenger to carry into the car with him probably more than three times the amount of baggage that he could dispose of conveniently in one of our cars. At the above rates baggage may be taken up to the weight of 440 lbs. on one ticket. For weights in excess of this the rates are doubled. Applying these rates to the journey from New York to Chicago, with the allowance of 150 lbs. of baggage (165 lbs. would cost no more), we have:

	Class 3.	Class 2.	Class 1.
Fare	\$10.71	\$16.07	\$24.99
Speed .....	.24	.48	.48
Baggage	3.57	3.57	3.57
Total	\$14.52	\$20.12	\$29.04

The German second class cars are as good as our first class on most long routes. The first class can hardly be said to be better, but there is usually plenty of room in them. If we take a passenger without baggage, the charge is reduced to \$10.95, \$16.55 and \$25.47 respectively.

Journeys of that length, however, are extremely rare in Germany; and even those of half that length are not common. From New York to Buffalo the German charges would be:

	Class 3.	Class 2.	Class 1.
Fare	\$5.05	\$7.58	\$11.79
Speed .....	.24	.48	.48
Baggage	2.85	2.85	2.85
Total	\$8.14	\$10.91	\$15.12

This is an unfavorable specimen on account of the baggage; if the distance were only five miles less the charges would be 36 cents less. New York to Boston or Washington (say 370 kilometers) we have:

	Class 3.	Class 2.	Class 1.
Fare	\$2.64	\$3.96	\$6.16
Express .....	.24	.48	.48
	\$2.88	\$4.44	\$6.64
Baggage	1.43	1.43	1.43
Total	\$4.31	\$5.87	\$8.07

No figures are given for fourth class fares, because fourth class cars are not run on express, nor for long distances. In considering these comparisons it should be remembered that the German fares are to be good on all state railroads in the German Empire, and our figures are chiefly for the routes of heaviest travel and lowest fares in this country. Comparisons with routes in the far West and the South would be much more unfavorable for the American lines. There are nowhere in Germany districts where population is so thin and travel so light as in many parts of this country. Further, it should be remembered that an overwhelmingly large part of the German travel is third class. Again, there is now a tax on tickets, which adds to the traveler's expense, though not to the railroad's income.

AN ARGUMENT AGAINST GOVERNMENT RAILROADS IN THE UNITED STATES

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The people of the United States are enjoying unprecedented prosperity. The causes of the present rapid development of the country are numerous, but probably the highly developed railway transportation system has been more influential than any other force. In 1870 the railroad mileage of the United States was only 53,000; to-day it is 220,000, an increase of over 300 per cent in a generation. Although no one questions the financial success of private management of railroads, there are many persons who believe that the railroads in the United States should, in the future, be owned and operated by the government. Those who are of this opinion argue that the railroads as now managed are a private monopoly, the effects of which are detrimental to the public, and that the only method of escaping the results of private monopoly is to substitute therefor the greatest government monopoly the world has ever known.

Such a program is so revolutionary that it can be justified only by an absolute demonstration of the failure of the present method of private ownership and management of railroads to meet equitably and adequately the transportation needs of the people of the United States. Furthermore, the advocates of the change must be able to prove that government operation can be made a success.

If a radical change is to be made in present railway operation, it must certainly be made only for good reasons. Are there adequate reasons? If so, one of the reasons would naturally be high rates. As far as rates are concerned, the consensus of intelligent opinion is that rates are generally lower in the United States than in any other country, and that until very recently, at least, they have tended steadily to decline. The complaint in regard to rates is not that they are too high in general, but that they are unduly high in certain localities and that they are not uniform to all shippers, *i. e.*, that they are to some extent extortionate and to a large extent discriminatory.

How far, it may be asked, will government ownership simplify the problem of rate-making? It may, of course, be assumed that the government will be as much concerned as would any private corporation in establishing freight rates that will be reasonable and attractive to shippers generally, and at the same time remunerative and yield fair profits upon the capital invested. To one who has never considered the subject, the intricacies of rate-making will prove a painful and vexatious surprise. There are so many different and discordant elements entering into the conditions that an exact solution is impossible. It is not our purpose to explain in detail what the rules of rate-making are or should be, but rather to emphasize the inherent and accumulated difficulties involved. As observed by the Industrial Commission, in its report to Congress,¹ "the conditions are highly complex, and no simple and general rules can be made to govern in all instances. The very complexity of the problem emphasizes the necessity for intelligent direction."

The problem which a freight agent or traffic manager has to meet is so different from that which the public supposes, that it is hard to explain it in a few words. The picture that seems vividly portrayed upon the minds of most men is that of the general freight agent arbitrarily deciding upon whatever rate he deems sufficient to pay for the "cost of service" (the cost of actually moving a ton of freight a certain distance), together with enough to cover the company's taxes and the interest on the bonded indebtedness (which is generally assumed to be needlessly and culpably large), and to pay dividends on an artificial and imaginary capitalization. In reality, this sort of reasoning is putting the cart before the horse. The rate is really dependent upon conditions in the world of trade, the character of the commodity to be moved, the extent of competition from other carriers, either rail or water, and the possibilities of the development of a line of business or a section of country.

When the rate has once been made and the revenue earned, the next problem is the prosaic one—very familiar to every housekeeper—of adjusting expenses to income. The name of these expenses is legion: The wages of labor and the cost of fuel and innumerable supplies are elements in the cost of conducting transportation. The maintenance of the roadbed and stations, and of the terminal facilities in great cities—these are elements in the maintenance of the

¹Report of Industrial Commission. Vol. XIX, p. 359.

physical property of the road. New engines and cars and the repair of old ones make up the account called maintenance of equipment. The taxes due the state, and the interest on the bonded debt of the company, make up the company's fixed charges; charges which must be met if the corporation is to remain solvent.² Then there is still the need of setting aside funds against the depreciation of the property, the maintenance of a surplus against hard times and unlooked for expenses and emergencies; and, lastly, the raising of a net revenue for dividends, so that those who own the road may receive some return on their investment. All these varied expenses enter into the financial side of railroad management.

Very often the salvation of a road is bound up with a reduction of its cost of operations rather than in the raising of its freight rates—which latter performance is likely enough to be a sheer impossibility, and unwise, even if possible. The Lehigh Valley and the Southern Pacific roads are recent illustrations of this fact. Both of these companies found it necessary some years ago practically to reconstruct their properties, if they were to remain in the business of transportation and earn money. After periods of entire cessation of dividend paying, and by means of prodigal expenditures on improvements, they have once more taken their places in the list of properties for investment. Very often these periods of reconstruction press with crushing force on the owners of the road, the stockholders, of whom we hear so little in most of the discussions on railroad reform. Sometimes nothing else than a heavy loan will give the company the ready cash to meet importunate but just demands of shippers for increased facilities and speedier transit of freight. Sometimes there must be the heroic remedy of a receivership, a scaling down of indebtedness, and a general reorganization.

It is idle to imagine that officials or clerks in a government bureau will be able to handle such questions as we have mentioned better than the trained, experienced and well-paid officers of a railroad. Nay, it is difficult to think of their being intelligently, speedily and satisfactorily disposed of at all by any government department. Whoever has had dealings with a great government office knows the truth of these words. For reasons that are pretty well under-

²The author, in using the term "fixed charges," is aware that opinions differ as to precisely what should be included in that term. So also as to the other items of expense set out.

stood by the American people, the government possesses an unrivaled facility for drawing to itself a vast proportion of the mediocre, the lazy and the unambitious. While every government office contains a certain modicum of faithful and efficient public servants, it is usually the irony of fate that they are in a permanent minority, are persistently underpaid, and, if they have not lost heart, are seeking an early opportunity to retire from public service altogether. In short, there is a steady tendency for the competent to resign and the incompetent to remain, coupled with an appalling official inertia that tends to stifle the slightest exhibition of individual enterprise or initiative. This fatal tendency toward petrified conservatism is one of the worst features about the conduct of public business. Nor is there much hope of any marked improvement through civil service reform. Excellent as that is, it is at best a cumbersome piece of machinery, ineffective outside of certain limits. A vast improvement on the spoils system, it has completely failed to raise the average government office to anything like the level of effectiveness easily secured in any good private business establishment. Enthusiastic reformers cheat themselves into the belief that the weight of an enlightened public sentiment—the traveling and shipping public being brought in daily contact with the railroad—would compel an improvement in the conditions we have pictured. Has the weight of public sentiment ever permanently cured the lesser diseases of the body politic? Has it brought effectiveness, economy and high character into the police, street and water departments of our great cities? How often is a state capitol built within the appropriation? Have the taxpayers of New York ever checked extravagance and corruption on the Erie Canal, or taken that formerly useful artery of travel out of “politics?”

Even assuming that the tone of the public service can be made equal to that of an ordinary business house, the question still remains why government officials will be able to solve transportation problems better than private individuals. There is no magic in wearing the livery of government, and no private fund of knowledge is at the disposal of its officials. They have no peculiar facilities for reaching correct conclusions. The problems will not be a whit simplified by placing the carriers in the hands of a government bureau. The difficulties that now hang about the subject of freight rates are inherent and rest in the very nature of the service to be

performed. Unless freight rates are to be prescribed on a blind, arbitrary and unreasonable basis, without regard to the real and ever-changing conditions of the business world, the same difficulties that now puzzle traffic managers, vex merchants, and assail railroad commissions and courts, will be present as surely and as potently under public service as under private ownership.

But to the mercantile community the transfer of ownership would be a change fraught with unending and incalculable mischief. If there is one desideratum for the shipping community and the world of trade, it is a system of freight rates that shall be flexible and adaptable to the thousand and one varying conditions of business. We have lately heard so much about "stability of rates" and "maintenance of the published tariffs"—necessary and proper as these are—that we have almost forgotten that flexibility is as essential as uniformity. It is the glory as well as the weakness of our transportation system that it is peculiarly American, truly a plant of native growth, and that it has, on the whole, adapted itself marvelously well to the development and unprecedented expansion of our country. This has resulted from a remarkable power of adjustment to local needs in a land where growth and change have been abnormally rapid. New communities have received transportation facilities at times when there has not been enough business to pay the bare cost of the salaries of engineers and conductors. Industrial plants, not only those of overgrown corporations, but new ones in sparsely settled regions, have enjoyed freight rates which have enabled them to land their goods in the first markets of the world. Witness the action of the Great Northern road, ever since its inception, towards the farmers and lumbermen of the north-west. Note the policy of the Southern Railway toward the iron works of Alabama and the cotton mills of the Carolinas and Georgia.

If in place of a management of this kind, at once both sympathetic and self-interested, the merchants had been obliged to meet the stolidity of a government bureau, its circuitry of operation, the desire to postpone action till "after election," how different must have been their experience. Or, if they had been forced to deal with Congress, they might have seen the measure succeed in one house or before one committee, only to be indefinitely delayed in the other house or in committee of the whole, or played off against other interests in far-away sections of the country whose represen-

tatives demanded some *quid pro quo* for their support. They would then have realized the profound truth contained in the observation of a great modern historian, that the people's representatives and lawmakers have rarely accorded any great public privilege except under strong pressure.

Under present conditions, the aggrieved merchant may always appeal from the railroad company itself to government aid in some form. State and federal commissions stand ready to adjust rates—sometimes, indeed, with “a strong hand and a multitude of people”—and behind the commissioners are the courts. Everybody is ready and willing to move against a railroad corporation. But let the government once become the supreme monopolistic owner of the mightiest railroad in the world, and how feeble and helpless will be the shipper who pleads before some government department for relief in freight rates, having nothing but the merits of his case to invoke in his behalf.

Thus far I have been insistent only upon the main contention that, in the very nature of the case, there is nothing about government control or government officials that can promise any easy or satisfactory solution of the problems of transportation, and much to suggest the very reverse. But there are many other weighty considerations against government ownership and in favor of government supervision. One of these is the facility for offering secret rebates which must occur under any plan of government-managed railroads. From the earliest times, government officers have been peculiarly open to fraud and malfeasance, and especially so in large and highly centralized governments. Witness Russia and China across the water. Glance at our own history. During the years after the civil war the government at Washington seemed fairly honeycombed with corruption. The *Credit Mobilier* and the whisky frauds flourished, and Congress actually found it necessary to impeach a cabinet officer for misconduct. The scandals in our municipal governments are too well known to need specific mention; and in very recent years we have seen the discovery of gross frauds in our postoffices, and a shameful waste of millions of dollars voted by the people of New York for improving the Erie Canal. There is nothing about government management that gives the smallest hope that the secret rebate would not be freely used. Indeed, the ease with which favors of this kind could be granted or denied

would place in the hands of the dominant party such a power as is fearful to contemplate. And what reformation is so difficult of accomplishment as the cleansing of a great bureau or department?

There is another excellence which we Americans have thus far enjoyed with which we must part forever if the government is to run our railroads. This is the possibility of reorganizing a bankrupt and unprofitable line by scaling down its debts and charges. This process, drastic and severe as it may be upon a few individuals, has, nevertheless, proved of inestimable benefit to the country at large, and the very salvation of many of our now flourishing companies. It has enabled all parties to wipe off old scores, turn over a new leaf and start afresh; and this reduction of charges has made possible important improvements. But in Germany, where government ownership has long prevailed, much embarrassment has been felt from the inability of government to carry out such a process of reconstruction. The debts of the road once assumed by government remained as a permanent incumbrance, and have never been discharged if the earnings have been insufficient to pay the interest. This is but another illustration of the necessary rigidity and want of elasticity of any system of management proceeding by constitution and statute, it is bound to observe legal rather than commercial requirements, and is dependent on the action of hundreds of lawmakers gathered from the four corners of the land.

I am aware that some enthusiastic advocate of government railroads will insist that I am looking at new conditions through old spectacles. When the government takes hold of the transportation system of the country, there will be no difficulties about freight rates, or bonded indebtedness, or competing lines, or differentials. All these troubles will vanish like the creatures of a bad dream. The government being the sole owner of all the lines, there will, of course, be no competition. The government officials, having no private axe to grind, will act in an enlightened and disinterested manner. The government having unlimited wealth and the ability to raise any sum it needs by taxation, there will be no trouble about remunerative freight rates, or capitalization, or receiverships, or loans. All these matters will settle themselves, or can be left to the "wisdom of Congress." The difficulty about such reasoning is that it draws heavily on the credulity of the American people. For, if the government is to run the railroads, the thinking part of the

community will demand that they be run at a profit, and not at a loss, and that the freight rates shall be lower than—not merely as low as—at present. If this mighty change is to be made, some great, striking and substantial gain must be the result, or the plan is not worth the carrying out.

While the American people have great faith in representative government within lines that have been tried, nevertheless they have seen the legislative branches of their government, state and federal, severely strained of late to transact only such necessary and usual business as has fallen to their lot. In the space of seventeen years, they have lived through the enactment of three tariff acts imposing duties on imports. The passage of these measures has afforded them an opportunity of observing how Congress deals with a complicated measure affecting many rival sections of country and hundreds of hostile interests. They have witnessed the spectacle of a lower house—the “popular” branch of the national legislature—helpless in the hands of a speaker and a committee on rules clothed temporarily with almost despotic powers. They have seen the most deliberate and intelligent legislation emanating from a senate of relatively small membership; but they have also seen the senatorial committees themselves driven almost to desperation by the terrific pressure imposed upon them by irreconcilably conflicting interests working for different ends by means of powerful and effective lobbies. The result has invariably been a compromise—which every lawmaker has realized was imperfect, but which he would dread with almost pathetic timidity to see reopened for discussion and amendment.

The framing of a tariff bill, vast and vexatious as it is, is child's play beside the task of arranging a schedule of freight charges for the multitudinous cities and towns of a country extending over 3,600,000 square miles, and having commercial relations with every nation on the face of the globe. In the presence of such a duty, the most learned legislature that ever convened might well shudder in abject helplessness. From time to time, as certain individual states of our union have created state railroad commissions, they have often provided that the first duty of the new commission should be the preparation of a complete schedule of freight rates for all purely intra-state commerce (*i. e.*, commerce originating and terminating within the limits of the state). Insignificant as this labor is by the side of the making of a schedule of rates for the

nation, it is nevertheless a herculean task, and one that has proved beyond the powers of any set of commissioners that was ever got together to perform intelligently.

Yet, if government ownership is to prevail, the determination of millions of rates for the greatest mercantile nation of the globe must devolve upon some one body of persons, be their number or official designation what it may. Involuntarily we recoil at the bare thought of such unlimited powers inhering in any single body of officials under a government that calls itself free.

But the limits of this article forbid a consideration of the subject in all its details. I have tried to indicate some of the enormous difficulties involved in any system of government control and ownership of the machinery of transportation. But I have only touched upon them, and some I have not even mentioned, as, for example, the immense national debt that must be created in the attempt to purchase billions of dollars worth of railroad property, the vast issue of bonds thereby made necessary, the bitter opposition to even moderate bond issues that has been manifested by a great portion of our people, the jealousy of organized labor toward so vast and irresponsible an employer as the government, the entrance of the railroad workingman's vote into politics as the vote of a distinct faction of officeholders, the vice of a quadrennial change of management and administration at the national capital, and last, but by no means least, the probable change in the temper and tone of the federal government toward both the states and the people when made the repository of such great authority and power.⁸

The true line of progress is that which has grown up naturally in the past generation, since 1870, and along which we have thus far traveled safely, if not brilliantly. It is the policy to which President Roosevelt has pledged himself, which Congress has embodied in a statute, and which more than thirty states of our union have actually tried by means of railroad commissions. It is a policy of regulation and supervision to be sharply distinguished from that of ownership, just as we have long had a government supervision, both state and federal, over banks, without participation on the part of the government in the actual business of banking. It has

⁸No attempt has been made in this article to enter into the constitutional question of the power of the federal government to acquire railroad property and engage in the business of transportation.

not, of course, secured perfect results, nor given universal satisfaction. Very few institutions in this world have, not even trial by jury, which is probably enshrined as strongly as any purely political institution can be in the hearts of the Anglo-Saxon race. In our new rate law, we have gone to the very verge of safety in the experiment of government regulation; and common prudence demands that we give the new machinery a chance to show the kind of work it can do before we attempt further alterations. Perhaps the most serious charge against government supervision of railroads thus far is that its machinery is cumbersome and its operations slow. But it has combined the inestimable advantages of individual freedom and enterprise, coupled with responsibility and amenability to law. Whoever imagines that any system of governmental operation will be free from the defects of cumbersomeness and tardiness must be singularly guileless and unacquainted with the transaction of government business.

Should the time ever arrive when the American people will be willing to deprive themselves of such an immense field of individual effort as is now afforded by the business of transportation, it will indicate that they have materially lessened their faith in man, and have forgotten the truth embodied in the observation of Chancellor Zabriskie, of New Jersey, that "The security and continuance of a free and just government is more important than its extension or its power."

COMMUNICATION

SHOULD PUBLIC FRANCHISES BE TREATED AS CORPORATE PROPERTY?

By ARTHUR W. SPENCER, Brookline, Mass.

Though widely accepted, the familiar theory that a public franchise granted to a corporation has the character of private property is open to serious objections. Franchises are taxed as private property where public service corporations are subjected to state control of even the simplest form. At the same time, the revenue which is thus secured, being offset by certain corporate burdens thrown upon the public, is less advantageous than might at first sight appear.

A special franchise is of its nature a grant of a public right to a private individual or corporation. Commonly it is a right to the use of streets, highways, and public places for the purposes of lighting, transportation, water supply, and other public utilities. It usually happens that the right granted is practically, if not theoretically, exclusive—that is, the corporation to which it is given will not be disturbed in the exercise of the privilege by a competitor. A special franchise is thus to a certain extent a license to engage in some form of monopoly, and it commonly implies an unusually favorable opportunity for commercial gain. The value of this commercial privilege may be readily expressed in figures, by a computation showing the amount of capital which would be necessary in ordinary safe investments to produce the same income. Of course it is only proper that if such a right is to be conferred upon any private corporation the public should be liberally compensated therefor, by taxation or otherwise.

It is easily to be perceived, however, that the commercial value of the franchise is derived mainly from the principle of monopoly, for without monopoly the mere exercise of the privilege to use the streets for a definite purpose would be subject to the risks and uncertainties of ordinary competitive trade, and those engaged in it would in many cases derive no profit from the franchise at all, over and above the profit on the money actually invested. The award of franchises under a competitive policy is, of course, open to grave objections. It is here referred to merely for an illustration. Let us suppose, for example, that a city were to bestow the right to use its streets upon a number of street railway companies operating in close competition within a restricted territory. It is easy to see that if by careful management each of these companies was able to pay fair dividends on the capital actually invested in tangible property, it would be doing exceedingly well. There could be scarcely any opportunity, under close competition, for any profits in excess of a reasonable return on the actual investment. The franchises granted these companies, therefore, assuming that the city

has not made them pay for them, represent no commercial privilege which has a money value; they are public rights pure and simple, juridical rather than economic in their character, and though they have been assigned to private parties they still retain more of the nature of public privilege than of private property. The commercial value cannot come in until the granting of franchises is attended with concession of special opportunities for gain. The grant of a right of monopoly has a pecuniary value which is by no means commensurate with the value of the intangible public right. The latter, in fact, is immeasurable as regards value, and is in itself devoid of a commercial aspect.

It is not solely from the monopoly, however, that the money value of a public franchise is derived. A franchise is very often a permit to practice legalized forms of extortion from the public. Among gas and street railway companies, dividends of seven and eight per cent are the usual thing, and some pay even more on their capital stock. Numerous forms of stock-watering are devised to swell the profits of the corporation at the expense of the public. Not only are earning capacity and surplus capitalized, but stock is issued for debts improperly contracted, for accumulated and sometimes superannuated property which is of no use for the public service in question, and for duplications of plant which the corporation formed by consolidation proposes to continue rather than eliminate. Not only is the capital stock swollen to needlessly large proportions, imposing a serious burden of exorbitant dividends upon the public, but improvements which might bring about an improvement of service or a reduction of prices are neglected. Public opinion meekly tolerates all this, and even in conservative Massachusetts, where the checks on stock-watering are stronger than in any other state, a corporation like the Boston Consolidated Gas Company was permitted to capitalize a debt of \$6,000,000 without being called upon to show for what purposes this indebtedness was contracted. The prevalent attitude both of the public and of legislatures regards public service corporations not as companies organized for the express purpose of financing and carrying along public utilities on such terms as the state may direct, but as ordinary commercial enterprises enjoying the right to wrest all the profit the law will allow from their customers. The usual view, in fact, is that public service corporations are privileged, like all commercial enterprises, to employ distinctly mercenary methods and seek to secure large profits, rather than that they are safeguarded investments under the tutelage of the state from which predatory methods should be rigidly excluded by statute. In accordance with the prevailing view, the license to engage in a spoliation of the public must of necessity possess great commercial value. The misconception which disregards the nature of a public right, treats it as a business asset, and exploits it to the injury of the public, is thus another cause which co-operates with the concession of monopoly to give to public franchises an enormous money value.

If this way of treating a franchise as a business asset did not result in extortion it would be a very different matter. As a matter of fact, however, the practical results are pernicious. The corporation which regards its fran-

chise as an asset will, of course, seek to derive advantages from it, and such advantages are close at hand and may readily be turned to account. Unless rendered impossible by state regulation, the most natural step is the capitalization of the franchise, which fastens a heavy burden upon the public. As a franchise has scarcely any fixed commercial value independent of the astuteness of the corporation, the valuation determined for the franchise can hardly fail to be excessive. But if statutory restriction renders the capitalization of the franchise impossible, the corporation will still endeavor to obtain the benefits attending its permit to engage in commercial exploitation, and will have recourse to the many other possible methods of stock-watering which present themselves as possible alternatives to franchise capitalization. Of course if the public treats the franchise as a bonanza the corporations will.

The cases in which a city exacts compensation for the franchise, in the form of a sale or lease on good terms, may seem to contradict the foregoing argument. For if the city exacts a price fully covering the value of the concession, one might suppose that the result would be the same as if there had been no concession. But the objection to such cases is that the corporation will naturally seek to obtain profits far in excess of the amount to be paid the city for the franchise. If the transaction is a sale, a large amount of stock will be issued, and by a swollen capitalization the chance for concealed profits becomes highly advantageous to the purchasing company. Or if the franchise is disposed of on a lease, the corporation will find a way to pay the lease and at the same time convert it into a source of profit. It is not to be expected that corporations will treat franchises for which they are compelled to pay large sums as anything else than property subject to the ordinary laws of traffic and as the source of increased income. The lack of enforced publicity in the accounts of the public service corporations, which is a serious want, is especially favorable to the practice of methods which compel the public to pay more, in the prices of utilities, than the corporation pays the city for the franchise.

So generally is the practice of the alienation of public rights for purposes of private gain tolerated, that it is difficult, perhaps, for the reader to see just what its abandonment would entail. The reform, however, is simple enough in principle. Treat a franchise as a grant of a public right as before, but a grant which does not destroy the character of the public right by transmuting it into a commercial concession. Give it to the public service corporation, without exacting compensation in return, and do not permit it to be capitalized. Treat the franchise thus disposed of, not as an absolute monopoly which the constitutional safeguards against impairment of contract compels the state to protect, but as a monopoly continuing only during good behavior, terminable at will for good cause. Above all, by state regulation of capitalization and enforced publicity of accounts, prevent the corporation from treating its franchise as a source of profit. Let it earn fair dividends on the capital actually invested for the public good—dividends based on the market rate for funds for investments possessing the same low degree of risk—and restrict its net profits to such dividends, after the expenses of construction and depreciation have been provided for. The enforcement of such a pro-

gramme as this would render it impossible for a franchise to become a source of income, as a franchise.

Obviously if a franchise is not to be dealt with as a business asset and is prevented by stringent regulation from becoming a source of profit, it cannot be just to levy a tax upon it. It is not private property, for the reason that it has no economic character as an income-producing entity, and it therefore should not be taxed as private property. As a matter of fact the adoption of this principle, while it would work much harm under the prevailing lax conditions of regulation, would not be injurious to the state under a system of strict control. Franchise taxation has its function to fulfil as a check on corporate aggression, and as a means of replenishing the public coffers with a portion of the treasure extorted from the customers of the corporations; but so soon as proper control is established, the need of such a restrictive measure is removed, and the property subject to such taxation is taken away, for the reason that taxes should not be levied on property which the law would declare is to be used for the benefit of the public and not of private individuals. There seems to be the rub—if franchises had always been treated as public rights, even after assignment to private individuals, the interest of the public in them would have been constantly perceived, and the vexatious confusion of public service corporations with private ones, from which the present age suffers, would never have come about.

The custom of taxing public franchises which is so generally adopted, and the decisions of our highest courts sustaining the practice, are by no means criticised in this paper. It is believed, on the contrary, that with matters as they now are, it is better that franchises should be taxed, and in many states they are not taxed as severely as they ought to be. This practice, however, seems to the writer to find its justification in the existing régime of confused public rights and private privileges. As soon as order is brought out of chaos by careful and accurate delimitation of the powers and duties of public service corporations, and a system of more stringent control is set up, the disadvantages of treating franchises as sources of gain and subjects of bargain and sale will be realized, and it will be seen that if the public interest is to be safeguarded, public rights must always be retained under public control, and likewise the individuals or corporations permitted the use of such rights for special purposes.

The ideal manner in which public franchises should be appraised has given rise to so much difference of opinion among economists that we can never be certain, whatever measures are adopted, that their value is not underestimated and the corporation is not presented with a bonus which robs the public. It may be doubted whether this problem of valuation can ever be settled to the satisfaction of any considerable number of intelligent citizens. The retention of franchises as public rights thus holds out the prospect of more effective control than could otherwise be secured.

The chief factor in the movement toward municipal ownership of public utilities is the absence of adequate government control of public service corporations. It is believed that the treatment of franchises as private property increases the temptation to embark in municipal ownership ventures,

It certainly is favorable to overcapitalization; moreover, as we have seen, adequate compensation for the franchise is hardly to be looked for. The treatment of franchises as public rights subjecting the grantees of the use of those rights, on the contrary, to certain rights and duties, might solve the problem for many of our cities which are vacillating between private and municipal ownership. What our cities greatly require is a system in which the advantages of private ownership and public control shall if possible be combined. Inasmuch as capital to be devoted to the public service can readily be secured at fairly low rates, the problem is not really so formidable as it appears, and the treatment of the franchise as public property would seem to furnish all the justification needed for intervention in the affairs of corporations exercising public rights for the public good.

NOTES ON MUNICIPAL GOVERNMENT

Port Administration and Harbor Facilities

A SYMPOSIUM

- New York City.**—J. A. BENSEL, Commissioner of Docks and Ferries, New York City.
- Chicago.**—FREDERIC REX, Assistant City Statistician, Chicago, Ill.
- Philadelphia.**—WARD W. PIERSON, University of Pennsylvania.
- Boston.**—CHARLES H. SWAN, Boston, Mass.
- Buffalo.**—F. HOWARD MASON, Secretary of Chamber of Commerce, Buffalo, N. Y.
- New Orleans.**—JAMES J. McLOUGHLIN, New Orleans, La.
- Detroit.**—DELOS F. WILCOX, PH.D., Secretary of Municipal League, Detroit, MICH.
- Washington, D. C.**—DANIEL E. GARGES, Secretary Committee on Wharves, District of Columbia.
- Providence.**—FRANK E. LAKEY, Providence, R. I.
- Wilmington, Del.**—WILLIAM COYNE and JOHN N. LAWSON, JR., Wilmington.
- Duluth.**—ALFRED MCCALLUM, Duluth, Minn.
- Tampa.**—J. D. CALHOUN, Secretary of Board of Trade, Tampa, Fla.
- London, England.**—PROF. J. RUSSELL SMITH, University of Pennsylvania.
- Manchester, England.**—ERNEST SMITH BRADFORD, University of Pennsylvania.
- Hamburg and Bremen, Germany.**—S. S. HUEBNER, University of Pennsylvania.
- Barcelona, Spain.**—CHESTER LLOYD JONES, University of Pennsylvania.
- Antwerp, Belgium.**—HENRY RALPH RINGE, Philadelphia.

NEW YORK CITY

By J. A. BENSEL, Commissioner of Docks and Ferries, New York City.

The character and extent of the shipping which enters and leaves New York is very diverse in its character and comprises practically all the trades from that of a small fishing boat to the largest transatlantic liner. The total foreign commerce of the port for the year 1906 was \$1,460,812,356 in value, while the total of all ports of the United States was \$3,215,533,870.

The harbor of Greater New York comprises an extent of about 450 miles of water front of such a character as to provide safe accommodations for vessels of all classes, and docks of such water depth as to allow the unload-

ing directly from the ship to the dock and *vice versa* without trouble, so far as weather conditions are concerned. The extent of the harbor above referred to includes the Boroughs of Brooklyn, Queens, Manhattan, the Bronx and Staten Island (or the Borough of Richmond) which, in length of waterfront, might be specified as follows: Manhattan, 40 miles; Bronx, 105 miles; Brooklyn, 132 miles; Queens, 116 miles; Richmond, 51 miles.

But only 125 miles of water front is available for ocean traffic.

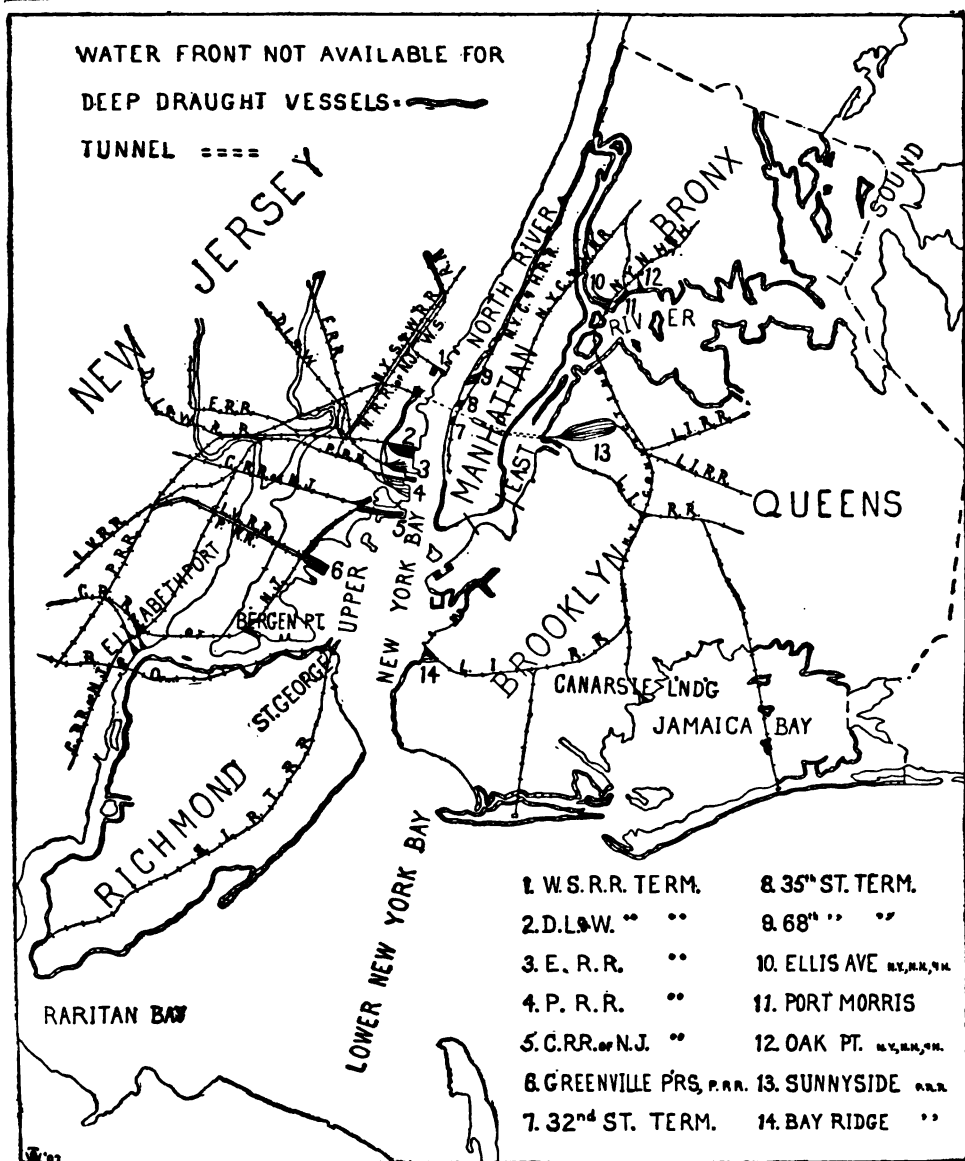
	Manhattan Miles	Bronx Miles	Brooklyn Miles	Queens Miles	Rich- mond Miles	Totals Miles
Available for Ocean Traffic . . .	7.50	..	101.10	13.25	3.25	125.10
Not available for Ocean Traffic.	32.40	105.60	31.20	102.75	47.75	319.70
Used by Railroads	2.22	1.80	0.08	0.63	0.60	5.33
Used by Foreign Steamships...	1.31	..	2.15	..	0.15	3.61
Used by Domestic Steamships..	0.96	..	2.00	..	0.15	3.11
Used for General and Miscellaneous Wharfage	7.83	2.51	20.14	11.20	5.60	47.28
Reserved for Parks	7.01	11.34	2.65	..	..	23.00
Reserved for U. S. Government	0.04	..	2.17	..	0.80	3.01
Total.....	39.90	105.60	132.30	116.00	51.00	444.80

For transatlantic shipping, the facilities are available along nearly the whole extent of the westerly side of Manhattan Island, a portion of the southerly side below the Brooklyn Bridge, and a portion of the Borough of Brooklyn extending for about five miles south of the Brooklyn Bridge.

In these locations, the nature of the shore and harbor is such as to allow for docking the largest vessels at present built. At other sections of the waterfront of Greater New York the conditions are such as to allow considerable use of the waterfront for railroad purposes, and for boats plying on the rivers and canals, and, in connection therewith, the local uses, such as transporting supplies, building material, grain, feed, etc. A considerable portion of the waterfront is also at present laid out as a park system, which is principally that reaching from the northly end to the center of the western shore of Manhattan Island, and a portion of the Borough of the Bronx.

At the present writing the city owns almost all the waterfront in the Borough of Manhattan, with a small ownership in the Borough of Brooklyn and in the Borough of the Bronx, and practically no ownership in the Borough of Richmond. The Borough of Richmond, although of large extent in waterfront, has only a small portion which is available at present for commercial development on account of the exposed condition of large portions of the shore along the southerly and easterly sides of the Island, and the hampering conditions to the size of piers which could be built, and the intensity of the current along what is known as the "Kill" side, that is, the northerly and westerly sides of the Island.

Manhattan Island is practically all developed for commercial use. Outside of the Jamaica Bay district, which is now being examined, the Borough



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of Brooklyn has one-third of its waterfront available for commercial use. About one-half of the waterfront of the Borough of Queens is available while the Bronx is developed only to a small extent. The Borough of Richmond is developed to the extent of about one-third of its total length of waterfront.

Organized in 1870, the Department of Docks and Ferries has operated for the condemnation and improvement of the waterfront, starting first on Manhattan Island. Since the establishment of Greater New York, it has operated over the whole of the Greater City. The purpose of organization is the condemnation and use for the municipality of the waterfront, now to a great extent (except on Manhattan Island) held in private hands. The state at the present time has an ownership in the lands under the water lying outshore of the waterfront itself to some extent in the boroughs of Richmond, Brooklyn and Queens, the state having, in the boroughs of Manhattan and the Bronx, made over its ownership in the lands under water to the city about 1876.

The management of this water front is vested by law in the Commissioner of Docks, who holds office at the pleasure of the Mayor. The Commissioner has general jurisdiction and power of government, but he cannot lease property except with the approval of the Sinking Fund Commission.

The operation of municipal ferries which is now being taken up, is an addition to the previous duties of the Commissioner of Docks, and at the present time the city is operating, through the Dock Commissioner, the ferry from the foot of Whitehall Street, Manhattan, to Thirty-ninth Street, Brooklyn, and from the foot of Whitehall Street to St. George, Staten Island.

The officers who directly control the waterfront in so far as the berthing of vessels is concerned, are known as dockmasters, having practically all the powers formerly vested in the state harbormasters in the administration and direct government of the waterfront. These dockmasters are appointed through the civil service by the Commissioner of Docks.

The income of the department at present amounts to about \$4,000,000 a year, the larger portion of it being from property leased to individuals, corporations and companies occupying the city's piers and bulkheads. All funds received by the Dock Department go to the sinking fund for the redemption of the city debt.

The expenditures of the department are provided for from bond issues amounting to not over \$5,000,000 per year, except by the concurrent resolution of the Board of Estimate and Apportionment and the Board of Aldermen.

CHICAGO

By FREDERIC REX, Assistant City Statistician, Chicago, Ill.

The harbor of Chicago consists of the Chicago and Calumet rivers, with their branches, forks and slips, the drainage canal and the waters of Lake Michigan for a distance of three miles from the shore between the north and south boundary lines of the city.

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To say that Chicago's harbor is its extended lake front is a misnomer, save for an "outer" or "Chicago Harbor," which, by the construction of a series of sheltering breakwaters, facilitates approach to the Chicago river. On good authority it has been argued that the city's harbor should have been created in the lake, yet the fact remains that by a direct inversion of the fitness of things commerce has overlooked its opportunity and found and made the harbor of the city in the Chicago and Calumet rivers.

The Chicago River, which, with the Calumet, constitutes the inner and actual harbor of the city, one mile from its mouth bifurcates, forming its north and south branches, the length of the main stream and its branches being about sixteen miles. Originally a stagnant stream with but little flow and having a maximum depth of 16 to 18 feet, with a variable width, it has been slightly widened in its narrowest parts by the federal government and systematically widened in its south branch by the Chicago sanitary district, rendering it navigable by vessels of 20 feet draft entering from the lake for the full length of the main river with the exception of a tunnel obstruction three-quarters of a mile from its mouth which limits safe navigation to a depth of sixteen feet.

The south branch, which has been widened and deepened by the sanitary district at an expense of over \$2,000,000, has a navigable depth of twenty feet for a distance of six miles, with the exception of two tunnel obstructions, which similarly restrict navigation. Inasmuch as the tunnels were by act of Congress declared "unreasonable obstructions to navigation" the Secretary of War last year ordered them removed or lowered so that there shall be a clear depth of twenty-two feet over them at low water. The work of lowering is now in progress, with an assurance of its completion before the beginning of this year's navigation season.

The south branch, being the main artery pulsating with the city's commercial activity, six miles south of its junction, connects with the sanitary and ship canals, which in turn joins the Des Plaines River twenty-eight miles distant and thence carries the water of Lake Michigan through the Illinois River into the Mississippi. Having a width varying from 160 to 290 feet and a depth of 22 feet, its value as an aid to the city's commerce will be most felt after an estimated outlay by the government of approximately \$70,000,000 on a deep waterway project, entailing extensive improvements along the rivers connecting Chicago with the Gulf of Mexico. The north branch of the Chicago river is navigable by sixteen feet draft vessels for about six miles.

It has been the aim to secure a uniform width of 200 feet in the main river and its south branch, and a clear navigable width of 140 feet through the draws of all bridges. It seems probable that this improvement will be completed within the next two years.

The Calumet river, about ten miles south of the mouth of the Chicago river and its active rival for the city's trade, has been described by Major Marshall, government engineer and a competent witness, as the "finest harbor on Lake Michigan." Of humble beginnings and used by small draft vessels only, it has by virtue of government favor been made navigable for

the largest draft vessels on the Great Lakes, having a depth of twenty-two feet and a variable width of from 200 to 300 feet.

The waterfront of the Chicago River is irregular, there being no clear delimitation of dock lines. Business firms have constructed docks jutting from one to six feet into the river beyond the line of neighboring docks, such construction either being due to intentional encroachments or unrestricted assertion of riparian rights. On the Calumet River, although no dock lines have been established by the city authorities, the federal government has established a uniform channel beyond which it has refused permits for docks. Center pier bridges still detract from the appearance of the harbor front, but it has been the tendency of the sanitary district to supplant them with improved bascule, or rolling lift bridges, as fast as time and money will permit. The possibilities of Chicago's lake shore have often excited the speculation of the visiting traveler, and justly so. However, as the title to the submerged lands under Lake Michigan is in the State of Illinois, the city itself is unable to prevent aggressions upon the same by private parties. Valuable acres of "made" land along our lake shore are to-day possessed by individuals and corporations because the city could not assert its rights and the state was passive.

Shipping activity in the port of Chicago has been practically at a standstill for the past ten years, and while easily accounted for, presents some interesting facts showing the gradual transition from the construction of freight-carrying vessels on the Great Lakes, having a draft below sixteen feet to great steel steamers having an average draft of twenty feet. In 1890 the tonnage of 18,472 vessels entering into and clearing from the Chicago River was 8,774,156, having an average cargo of 475 tons, while 1,661 vessels arriving in and clearing from the Calumet River had a total tonnage of 1,341,895, or an average of 808 tons. The difference is apparent when the carrying trade of the two rivers is compared for 1906. 11,650 vessels discharging and re-loading cargo in the Chicago River last year had an average cargo of 858 tons while the 1,947 vessels in the Calumet had an average cargo of 2,776 tons. In 1889 less than ten per cent of the total tonnage of the port of Chicago entered and cleared from the Calumet, while in 1906, with barely one-sixth of the number of vessels entering and clearing from the Chicago River, it had a little over one-half the tonnage. This condition of affairs would appear anomalous but for the fact that the vessels entering the Chicago River are, and must necessarily be, vessels of small draft, and consequently small tonnage, owing to the presence in the river of three tunnels, which, although as before stated, in process of being lowered, have limited safe navigation in the river to a draft of about sixteen feet. To show how much the trade of Chicago has suffered and the proximate cause of such loss one may quote from Hon. O. H. Ernst, of the United States Corps of Engineers, who says in a report made to the Chief of Engineers, May 26, 1904: "It seems to me evident that the trade of the Chicago River was bound to decline when the stream ceased to have the capacity necessary to accommodate the large modern freight carriers. Obstructions in the river, such as encroaching docks, center pier bridges and tunnels become more and more serious as the size of vessels

increases. They have now reached the stage where the largest and most economical freight carriers cannot use the Chicago River at all except near its mouth. Such vessels draw about twenty feet. The depth of water over the tunnels is about seventeen feet in two cases and about eighteen in the third, which limits safe navigation to a draft of about sixteen feet. Large vessels may with difficulty get by the other obstructions just mentioned but they cannot get over the tunnels. The tunnels are the most serious obstructions in the river and must, I think, be charged with the greater part of the loss of trade. It is certainly useless to hope for its restoration before they are altered. It is more probable that the decay of the river traffic will continue until that is done, notwithstanding that the other obstructions—center pier bridges and encroaching docks—are being systematically removed by the trustees of the sanitary district. If the extent of the injury could be measured in money, the amount would undoubtedly be stated in millions.”

As an example of how great an “old man of the sea” the tunnels have been to the Chicago River it may be instanced that often shippers of grain have bid two and one-half cents per bushel freight to Buffalo, notwithstanding that at Milwaukee and in the Calumet River there was a surplus of vessels at one and three-quarter cents, merely because the large steel freighters, plentiful at Milwaukee and South Chicago, could not gain entrance into the Chicago River to take cargo. In addition the smaller boats are rapidly being forced from the Great Lakes, generally being old and unseaworthy, carrying increased rates of insurance, and it has been predicted that within the next two or three years there will scarcely be five per cent of the ships on the lakes able to take a full cargo out of the Chicago River. Nevertheless its commerce during the past year amounted to 10,000,580 tons, the principal items being grain, lumber, coal and salt, while that of the Calumet River was 5,404,620 tons, principally iron ore, grain and coal. Because of its accessibility to great freighters its trade is constantly increasing and new manufacturing plants are steadily occupying the river banks as fast as the twenty-foot depths are carried upstream. This sub-port of the city is a great factor in controlling freight rates, effecting a saving of at least fifty cents per ton over the Chicago River rates and considerably more over the current South Chicago railroad rates. As soon as the obstructions which now impede the progress of the Chicago River shall have been removed and the stream placed on an equal footing with the deep and broad Calumet, then the port of Chicago will in a very short time surpass the water-carrying trade of New York. It even now, although greatly handicapped, nearly equals the commerce of that port.

The facilities provide for the handling of cargoes are naturally greatly dependent on individual or corporate initiative and enterprise. On most docks improved machinery and methods of handling cargoes are used. Cargoes of 100,000 bushels of grain are loaded within five hours and unloaded in six hours. In one instance, it is stated, that a cargo of 100,000 bushels of grain was unloaded with a loss of but two bushels. It takes but three hours to load a cargo of 5,000 tons of ore. Coal drops from the car-dumping machines or conveyancers into the holds of vessels, which three hours after tying up at the dock

are ready to sail with a cargo of from 3,000 to 5,000 tons. The economic handling of freight has attained a high state of perfection.

The only property along the Chicago and Calumet rivers which may be described as public property are the street stub ends along the river front belonging to the city, some 2,500 feet of dock constructed by the Chicago sanitary district on the south branch of the Chicago River, and the entire fifty miles of dock frontage along the sanitary and ship canal. The large number of other docks along these rivers are owned by private parties, there being approximately forty-five miles of private dock on the Chicago River and ten miles on the Calumet.

To enable the city authorities to handle the dock question satisfactorily in the future, the Rivers and Harbors Committee of the Chicago Charter Convention in 1906 submitted to the latter a bill authorizing municipalities to own, construct and operate "docks, wharves, elevators and warehouses" as well as "railroad tracks and machines" to operate the same, with the right to issue bonds for their acquisition and maintenance, with the recommendation that the charter convention memorialize the State Legislature for its passage.

Representative Kittleman, in speaking on the committee's recommendation, said: "I say frankly, with reference to the matter before us, that there is nothing in the charter convention that means more to the city commercially than the establishment of docks in a great harbor. If there is no other way of getting it then I would be in favor of the city owning, establishing and controlling these docks, so that Chicago would become what it ought to be, one of the greatest markets in the world." Mr. Joseph Medill Patterson, until recently Commissioner of Public Works of Chicago, one of the chief proponents of such municipal docks, states that the same, if constructed, could be leased for enough to pay the interest on the bonds and to create a sinking fund for the extinguishment of the original investment. Such a plan could not be considered radical. It would be merely applying historic bourgeois craftiness to a state of affairs where the community could engage in an enterprise to better advantage than a private individual. The realization of profits is not the chief end of a system of municipal docks. Save that it should not become a burden to the city its purpose ought to be the development of the business and prosperity of the port.

The harbor officials of the port of Chicago consist of a harbor engineer, who holds office under the civil service law, a harbor master, vessel dispatcher and numerous bridge tenders, who are appointed by the Mayor by and with the consent of the City Council. There are also a large number of assistants to these officials, a number of whom are civil service appointees, while others are exempt from the operations of the law. These officials, by the provisions of the city ordinances, have a jurisdictional supervision over the water area of the Chicago Harbor. They are required to keep the docks, bridges and other property belonging to the city free from damage; maintain a record of the movement of all vessels navigating the harbor; regulate the opening and closing of the bridges for the passage of vessels; provide vessel signals; report upon the safe or unsafe condition of private wharves and docks and require all private parties to secure permits for the construction

of the same; prevent all encroachments on harbor lines and remove all obstructions from the river.

The administrative work of the city's harbor officials is hampered and retarded in usefulness by the straightened conditions of the city's finances. While in New York the Department of Docks has floating property valued at about half a million dollars, consisting of derrick boats, steam tugs, steam and naphtha launches and the like, the harbor master and engineer of Chicago find themselves without even a moderately fast dispatch boat for inspecting and patrolling the harbor. It has been said that the Chicago harbor engineer, on a voyage of inspection, is expected to cruise about in a row boat among the ore-carrying monsters of the steel fleet in the waters of the Calumet. The doctrine of *laissez faire* certainly has had a liberal application in our western city, it having been well-directed policy on the part of special interests to keep its waters as free from restrictions and interference as the complaisance of municipal officials and the community would permit.

There are no wharfage charges fixed by city ordinance nor are any levied by the city harbor officials. The only revenue derived by the city along its lake and rivers is from rentals paid by private concerns for the use of street stub ends abutting the same. Formerly the revenue obtained from these stub ends was not very substantial or satisfactory, nearly always resulting in a loss to the public treasury. It has, however, been the policy of the present administration to exact compensation for all private uses of public property, and during 1906 nearly \$15,000.00 were realized from the rental of these stub ends. The amount expended in 1905 for dock and street stub end renewals was \$20,000, the sum received from rentals being slightly less than in 1906. Clearly the city in 1905 lost money from this source, but then it should be remembered that it is put to the expense of maintaining a large number of street stubs which it does not rent or use. The Chicago Sanitary District has come into possession of 2,500 feet of dock along the south branch whose value this year will be \$29,053.24, based upon proposals for leases now before its officials. The district recently has called for bids for leases on its sanitary and ship canal, it being the anticipation of its officials to secure a net return of \$500,000 from this source annually, within the next two years, with an eventual aggregate maximum income of \$1,500,000 per year.

In conclusion, our local rivers, aside from being utilized merely as highways of water transportation should, similarly to European cities, exhibit a water front to which the denizen may point as the most ornamental section of his city. Chicago still is making great forward strides in population and wealth. Surely it is but the part of wisdom, of comprehensive, expansive municipal statesmanship to devise plans of improving its rivers and lake, to build not for the day or the morrow, but for posterity. Let the experience of the great cities of the old world be its example. The improvements, which, if made, would cost the present generation comparatively a trifle, will, if delayed, cause the next the expenditure of vast sums. Where, to-day, our river front displays decaying wooden docks and wooden warehouses stand-

ing on the water's edge, the future may bid us hope to find a spacious stream, nowhere less than 250 feet in width, bordered by straight and regular concrete or stone docks, with bascule bridges sweeping across its full width. Turning aside from this comprehensive scheme of improvement to matters lying nearer our own hands, a complete survey of the lake shore and rivers should be made by competent engineers, and after a concurrent conference between the sanitary district, federal government and city authorities, an inclusive and harmonious plan of dock lines be reported and embodied in an ordinance to be passed by the City Council. Because of the city's close interest in the contiguous submerged lands in Lake Michigan and it being a matter which concerns the municipality solely, the State Legislature should be requested to vest its present title to the same in the City of Chicago. This will enable the city to deal with a problem which, under the ownership of the submerged lands by the state has enabled private parties to surreptitiously divest the city of considerable portion of its splendid lake front.

The authorization of the city by the State Legislature to own and operate municipal docks would enhance the prosperity and business of the port to an extent beyond belief. Where to-day the private docks are numerous, ill-constructed and without co-operation, municipal docks here, as in New York, would not only offer a uniform plan for the advancement of commerce but provide good, substantial and cheap places for the handling of cargoes.

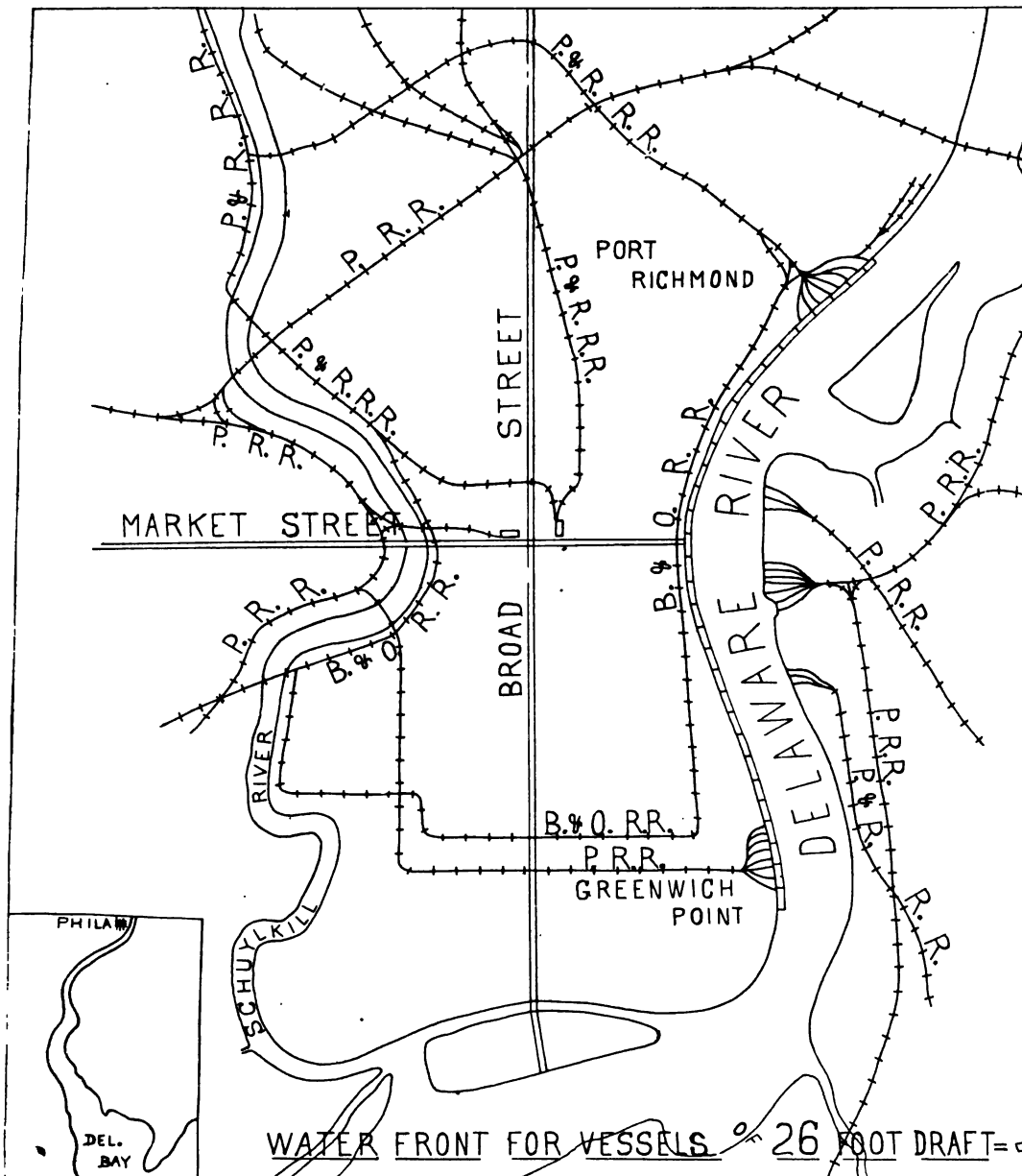
With the removal of the river tunnels and center pier bridges, the dredging of the river to a regular depth of twenty-six feet and width of 200 feet or more, as well as using the Chicago River as the connecting link in deep waterway communication via the Chicago sanitary and ship canal and the Illinois and Mississippi rivers to the Gulf, the port of Chicago will not only be the chief factor in the trade of the Great Lakes but bids fair to become a seaport of the first magnitude and the great central market of our continent.

PHILADELPHIA

By **WARD W. PIERSON**, University of Pennsylvania.

As the third most populous city in the United States, Philadelphia should be one of the leaders in American trade and enterprise, yet her foreign import and export trade last year amounted to only \$160,000,000, barely ten per cent of the trade of New York. Baltimore with but little more than one-third the population has a foreign trade of almost an equal amount. It is said that America has four great doorways to the great Atlantic highway, Boston, New York, Philadelphia and Baltimore. Philadelphia may be a doorway, but it is far from being wide open.

There is a general belief that the port of Philadelphia is by nature inferior, and this is often alleged as the reason why the commerce of the port has not increased so rapidly as that of other sea-coast cities. But, on the other hand, Philadelphia, for natural reasons, should be the best port on



the Atlantic seaboard. Situated well inland, 102 miles from the sea, on a broad, straight river, close to the center of one of America's great farming districts, the foundation for a steady agricultural trade is well laid. In addition to this Philadelphia is a terminus of a great railroad, the Pennsylvania, with 7,000 miles of track spreading out into the middle west and reaching into the very center of the granary of the world. Every important iron manufacturing plant in the iron and steel state is made tributary to Philadelphia by this same railroad. If there was nothing more to be said the foreign export trade of the Quaker City, in grain and iron products should be second to none in the United States. Added to all this, Philadelphia, is the terminus of the greatest of the coal roads—the Reading, which owns and controls the richest of the anthracite coal lands. The manufacturing industries of Philadelphia are more numerous and diversified than those of any other city in this country, with a single exception. Then, too, Philadelphia is ninety miles nearer to Pittsburg—the gateway to the west and its industrial centers—than is New York. It is nearer to Buffalo toward which gravitates all the commerce of the Great Lakes. It is nearer to the great oil fields of Pennsylvania and West Virginia and the terminus of many oil-pipe lines. And, as if all these advantages were not enough, Philadelphia has a further advantage of a differential freight rate over New York; but for some unknown reason the ocean freight rates via Philadelphia are higher than those via New York. With all these advantages, a natural situation unequaled—with natural monopolies without a rival either at home or abroad, Philadelphia, as a commercial city is not even second or third rate, but stands absolutely at the foot of its class.

The policy of Philadelphia is slowly changing, but that policy always has been to adhere closely to the belief that nothing is good unless it has endured for a hundred years or more. This is only too true of the attitude of many, blinded by their own private interests, to the laws which now govern the port. Not four years after the death of George Washington, the famous Port Warden Law of Pennsylvania, in reality little more than a codification of the then existing laws, was passed, and that is the law under which the port of Philadelphia is to-day administered. Laws that were made in days when steam vessels had barely been conceived in the minds of their inventors, and when a voyage across the Atlantic was a question of months, instead of days, these are the laws under which Philadelphia is endeavoring to carry on a trade with foreign nations to-day. Slight changes have been made from time to time in the original act of 1803, but these changes have been always to satisfy private interests, while the interests of the public have been permitted to grow less and less. So far as its administrative features are concerned, there stands the old system—archaic, antiquated, worn out, a monument to the past, a relic of the days of the alien and sedition laws, defying age and time.

That old law to which so much deference has been paid, and to which so little respect is due, save as we respect the dusty mummies of long forgotten ages, placed the administration of the port of Philadelphia in the hands of three authorities, a board of wardens, now eighteen in number; a harbor

master, and a master warden. The president of the board of wardens admits that they have insufficient power to meet present-day conditions. The powers of this board may be summarized briefly as follows: (1) Power to license property owners to build wharves, (2) to settle disputes, (3) to license pilots. This board was intended to be an efficient body, but it has proved to be quite the opposite. The harbor master is only a policeman and hitherto has done mostly as he has been told. The present incumbent of the office, however, is asserting all the powers that remain in this office, but he is acting under laws 104 years old, and as a result he is greatly handicapped in everything he undertakes.

The main fault lies in the fact that the authority is divided and that the officers are generally engaged in trying to do as little as possible. As a result there are to-day twenty city wharves, and there are only a few more owned by the city, at which there are but nine feet of water at low tide. So shallow, in fact, is the water alongside of these piers that the city fireboats could not get close enough to the shore to do efficient service in case of a conflagration. Theoretically, every pier in the city is open for public use; actually, along the entire waterfront there is but one covered pier at which a steamship of any considerable draft with a miscellaneous cargo can unload. The other piers are private or are leased to private parties. If the single pier just referred to happens to be engaged, a tramp steamship that does venture up the Delaware cannot dock unless some private owner will permit her to do so, and then only after the private owner has fixed his own wharfage rates, which the tramp can pay, or get out. If some one should want to open up a new steamship line from Philadelphia, there is not a single pier now from which she could begin her sailing. Some of the wharves are used as dumps and ash heaps; some as railroad yards; others are rotten and decayed and sinking below the surface of the water. There is not a single wharf, public or private, which will accommodate a vessel drawing over twenty-six feet of water, and three-fourths of them will not accommodate vessels of one-half that depth. At every point the interests of the city have been sacrificed to private or corporate interests. The law now in force requires that there shall be a certain distance between piers, but this distance may be departed from by order of the port wardens. Interests not public have been careful to purchase lands on both sides of nearly every street, and on that land to erect, close to the property line, a short pier which may or may not be used, but which, under an act of 1868, vests in that owner for all practical purposes a fee in the wharf. This precludes the city forever, except after condemnation proceedings or purchase, from becoming a competitor at that point because the street is not ordinarily more than wide enough to give the dock space required by law.

To-day the warehouses of Philadelphia are bursting with goods of all sorts and descriptions, waiting for transportation, but these goods must go out over private wharves. The belt line which extends for six miles along the river front was intended to relieve this congestion and aid the independent owners of wharves, and shippers, but, first of all, it was intended to connect the piers with each other and with the storage houses along the waterfront, so that transfers from one to the other could be made with

minimum cost and with minimum loss of time. Under present conditions the shipper can neither go upon a wharf unless he is owner or lessee, nor can a tramp vessel come alongside. If one wishes to send goods into or out of Philadelphia, he must do so by way of an established line, or consign them by way of some railroad.

At present Philadelphia possesses about eight miles of available water frontage on the Delaware, which extends from Port Richmond, the Reading terminal on the north, to Greenwich Point, the Pennsylvania terminal on the south. There is additional frontage on the Schuylkill, but it is of minor importance. The ownership of the wharves is both public and private; the control of the wharves very nearly private as the following figures will show: Of the eight miles of available water frontage on the Delaware, the City of Philadelphia owns 3,598 feet, the Pennsylvania Railroad Company owns 9,951 feet, the Philadelphia and Reading 9,200 feet, the Baltimore and Ohio 1,923 feet. The balance, 16,787 is controlled by private interests which exercise an almost complete monopoly over their wharves. These figures do not tell all, for of the 3,598 feet which the city controls, 2,196 is leased to private interests leaving 1,402 feet still under the immediate control of the city. Of the portion which is leased, sufficient is in the hands of the Pennsylvania Railroad Company to bring the total frontage under the control of that company up to about 11,000 feet, more than one-quarter of the entire Delaware frontage.

From leases and rentals of wharf property the city receives about \$68,000 annually. There are no charges for wharfage and crantage which flow into the city treasury, for there are practically no wharfage facilities whatever. Most of the leases expire between 1912 and 1915, so that if the city should desire to operate its own wharves, it would be impossible for it to do so, for at least five years.

There is practically no expense for maintenance and renewals or new construction because no effort is made upon the part of the city authorities to better the present conditions of the waterfront. At present there is a great effort being made by the members of the commerce organizations of the city, led by the Maritime Exchange, to have a new law passed by the legislature, vesting the authority heretofore residing in the harbor master, master warden and board of port wardens, in a department of the city government. This movement is being opposed by the lumber interests and some of the warehouse interests. All factions, however, are agreed that something must be done, if the port of Philadelphia is to survive.

By 1908 Philadelphia will have a thirty foot channel to the sea at low tide; Congressman Burton has committed himself to the thirty-five foot channel project. The commercial future of Philadelphia is bright, provided it meets the situation squarely and puts its own house in order; but until the harbor facilities are modernized the ocean-carrying trade must remain at a standstill.

BOSTON

By CHARLES H. SWAN, Boston, Mass.

The port of Boston is the natural outlet to the sea for eastern and northern New England and a large section of eastern Canada, particularly during the winter when the navigation of the St. Lawrence River is closed. Passenger steamers leave Boston at frequent intervals for the maritime provinces, for the cities of the Atlantic coast of the United States, for the West Indies, and for Great Britain and Mediterranean ports. Freight ships arrive and depart in large numbers bearing commerce to all parts of the world. Relatively with its position in colonial times Boston is less important as a shipping focus, but actually its trade is of great importance among the ports of the nation. The total value of the export and import trade for 1905 was \$200,000,000. Although the population of municipal Boston is only about 600,000, yet the wide area of populous suburbs within easy access gives the business community the commercial position of a city of a million and a half.

The harbor is commodious and is provided with islands and peninsulas with a very extensive waterfront as yet only partially developed. Originally the shores were composed largely of mud flats separating the deep water from the upland, but in the older parts of the city and in East Boston and South Boston much filling and wharfing have been done from time to time until now most of the harbor front within the business section and available for ready transshipment is occupied by almost continuous lines of substantial wharves. These are mostly wooden structures built upon piling and largely covered by great wooden sheds. On many of the large wharves there are good warehouses of brick and stone, mostly dating back for many years, with some new and fine structures. The facilities for handling cargoes are good, but might be greatly improved and doubtless would be if the Canadian business of the city were not hampered by the tariff. There is also much complaint about the difficulty of the entrance channels of the harbor. The largest ships have to wait for the tide.

The ownership of the wharves and the commercial waterfront of Boston is largely in private hands either individual or corporate. This is the outgrowth of gradual development from colonial conditions. In 1647 the Colony passed a celebrated ordinance declaring that private titles to shore property should extend down to low water mark but not in excess of one hundred rods from shore. This has been tested by the courts as a modification of the rule of the English law that shore property was presumed to stop at high water, but there is some reason for believing that it was a restoration of an earlier English practice which had been overthrown by the royal power. It is said that one reason for the colonial ordinance was to stimulate individual enterprise to provide wharfage facilities. At any rate from that time to the present the great bulk of wharfage in Boston and other ports of Massachusetts is in private hands. There are, however, many small public landing places reserved along the shore in scattered spots, and the City of Boston owns some wharf property, but only as isolated parcels and not as

a part of any general municipal development. Practically the city owns no waterfront other than on the parkways.

At South Boston and East Boston the commonwealth controls some of the waterfront, but it is as yet undeveloped. One large pier has been built but it has never been rented and is not shedded, nor has it at present any railway connections. The commonwealth, however, has undertaken a public development in part of the harbor, and has established harbor lines and channels and regulations about filling private flats in tide water. A large section of flats lying north of South Boston was outside of the hundred rod limit of private ownership and was therefore in the full control of the state. This the legislature some years ago directed to be filled and developed under state management and took by eminent domain a large adjoining area of private flats. This has already largely been filled in and laid out with streets and with a proposed deep-water channel for approach. The commonwealth generally retains the title to this land and has leased several parcels to private parties. The scheme is as yet in its infancy, but for the management of these and other lands of the commonwealth throughout the state there is a permanent board of harbor and land commissioners. This board has very extensive powers about filling tide waters, making harbor lines and channels, leasing state lands reclaimed for development and generally in protecting the public lands and navigation rights, but it is not strictly in any sense a board for managing the movement of shipping. Perhaps it would be well to enlarge its powers to cover the whole range of harbor facilities and navigation. So far those topics lie within state jurisdiction, but with the present system of the private ownership of wharves the more probable policy is to look directly to the federal government for such matters as exceed private facilities for management. The current river and harbor bill in Congress carries a liberal appropriation for deepening the channel.

BUFFALO

By F. HOWARD MASON, Secretary of Chamber of Commerce, Buffalo, N. Y.

Buffalo is the second city in size, population and wealth in the State of New York, and is the eastern terminus of deep-water navigation on the lakes, and western terminus of New York State's famous waterway, the Erie Canal.

The harbor facilities of Buffalo consist of an "Outer Harbor" under the jurisdiction of the federal government, and the "Inner Harbor" under the jurisdiction of the City of Buffalo.

The outer harbor has been created by the federal government by the construction of a breakwater system 25,411 feet in length, or 4.8 miles, the longest breakwater system in the world. The harbor area protected by this breakwater system covers 1,600 acres of which approximately 900 acres have a depth of eighteen feet or more. This is the largest artificial harbor in the world. Total cost of breakwater system \$4,500,000.

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The inner harbor has been created by the City of Buffalo by the deepening of Buffalo River and the construction of an artificial channel known as the Buffalo Ship Canal. The Buffalo River has been improved for the distance of 2.5 miles, which, with the City Ship Canal of 1.6 miles, provides a total of 4.1 miles of dockage, on which are located elevators, freight houses, warehouses, malt houses, coal and ore docks, iron furnaces, etc. The city has now under construction a project for the further improving of Buffalo River by widening and deepening. This will provide upwards of three miles of additional water frontage.

The following table shows the increase of net registered tonnage arriving and clearing at Buffalo by lake:

Year.	Total No. of vessels arriving and clearing.	Total net registered tonnage
1850	8,444	2,744,000 tons
1870	10,625	4,158,000 "
1890	9,762	7,556,413 "
1900	9,973	10,701,222 "
1906	8,557	13,989,517 "

Canal.

Year.	Tons.
1850	500,000
1870	1,873,000
1890	1,601,000
1906	1,756,081

The principal articles received are grain, lumber, iron ore and package freight; total grain receipts for 1906 being 120,397,163 bushels; flour, 10,279,384 barrels; iron ore, 4,723,519 tons; lumber, 194,165,476 feet; shingles, number, 227,436,000. Shipments by lake: coal, 2,681,000 tons; salt, 357,390 barrels; cement, 4,377,460 packages; sugar, 2,481,287 barrels.

The outer harbor at present is largely utilized as a place of refuge and for mooring; the completion of the breakwater system, however, has been followed by the location and erection of the plants of the Lackawanna Steel Company, Buffalo and Susquehanna Furnace Company, and extensive coal and ore docks by the Pennsylvania Railroad; the frontage being controlled largely by railroads, improvements are contemplated for erection of docks and warehouses along waterfront.

Located along the inner harbor are the grain elevators for receiving grain, coal trestles for loading coal, iron ore docks for receiving and storage of iron ore, and furnaces of the Buffalo Union Furnace Company; also warehouses and freight houses for the receiving and loading of package freight.

The docks are owned and controlled by private interests except at the foot of public streets. The harbor is under the control of a harbor master appointed by the Mayor, and the city has been fortunate in having a capable official in this office.

There are no public charges for wharfage.

There is considerable water frontage along the Niagara River in Buffalo, which has not been developed to any great extent by reason of the fact that the rapids at the head of Niagara River prevent the navigation of the stream by deep draft water vessels. The United States Government has approved a plan for the construction of a ship canal and lock around the rapids at the head of Niagara River, and work is now being done upon this improvement, which, when completed, will open up for additional commercial and industrial enterprises approximately twenty miles of water frontage.

NEW ORLEANS

By JAMES J. McLOUGHLIN, New Orleans, La.

The growth of the port of New Orleans during the past ten years has been marked. The natural outlet of the great system of rivers that thread the Mississippi Valley, it of necessity receives an enormous volume of river traffic. But of late years the great railroad systems have awakened to its importance, and are vying with each other in acquiring terminal facilities there, which will link their rail transportation agencies with the rapidly increasing lines of ocean steamships which frequent its magnificent harbor. With a harbor inferior to none, an equable climate, with no snow or ice to hamper the movements of commerce, its great natural advantages are now being exploited by those who realize that we only need the proper loading and unloading facilities to make New Orleans the greatest port in America.

Character and Extent of Shipping Entering and Leaving the Port.—The improvements at the mouth of the Mississippi River, making it possible for vessels drawing thirty feet to enter, have greatly increased the tonnage entering this port. For many years the ocean tonnage has been changing. Instead of a large fleet of sailing vessels coming to this port, there are now entering a larger number of steamers, of which the tonnage is greater, but the number is less.

The extent of the commerce of the port at present, can be best given by the following extract from the report of the Commission, ending August 31, 1906, viz:

"Sea-going"—The number and tonnage of vessels arriving at the port for the period of this report (year ending August 31, 1906), as is shown in tabulated statement was 1,505 vessels, or a gross tonnage of 3,855,919 tons, of which 3,040,668 tons occupied the public wharves, about seventy-nine per cent of the total. The wharfage earned from these vessels was \$209,557.09, an average of six and nine-tenths (.069) cents per ton.

"River Traffic"—was 1,150 arrivals of steamboats, 59 transportation barges, 716 miscellaneous arrivals, consisting of flats, coal, gravel and stave barges, tugs, etc., and 2,140 arrivals of luggers, and gasoline launches engaged in the oyster, fish and vegetable trade."

This report does not give the outgoing vessels, but the United States Customs reports, which are made up for the year ending December 31, 1906, show the following:—

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Arrivals:	Number	Tonnage.
Steamers	1,428	2,690,673
Sailing vessels	51	46,455
Clearances:		
Steamers	1,466	2,763,842
Sailing vessels	37	33,662

Nature and Extent of the Harbor.—The harbor of New Orleans comprises both banks of the Mississippi River, for a distance of about fifteen miles on each side, from Westwego on the right bank to Chalmette on the left bank. Westwego is the terminal of the Texas & Pacific Railroad, and Chalmette is the terminal of the New Orleans Terminal Company, whose tracks are connected with nearly all of the railroads on the left bank of the river. The river is from one-half to three-quarters of a mile in width, and the depth within ten feet from the banks ranges from 40 to 100 feet. The harbor is well sheltered. The current of the river is not too strong for unloading in mid-stream, although most of the vessels land, broad-side, along the wharves, which are constructed on piling and extending out into the stream from 50 to 100 feet in some places. This whole wharfage front on the left bank of the river, which is the bank on which the greater part of the New Orleans population lives, is approached by streets, and by lines of railroad tracks which permit cars to come on to the wharf, loading directly into the ships.

Facilities Provided for Handling Cargoes.—On the right bank, at the Westwego wharf, which is the property of the Texas & Pacific Railroad, there are sheds, wharves and tracks, etc., capable of accommodating six or seven ocean steamers at one time. These wharves, as stated, belong to the Texas & Pacific Railroad, and are used almost exclusively for their freight shippings. About four or five miles further down on the right bank, are the terminal facilities of the Southern Pacific Railroad, which are also provided with wharves, etc., capable of accommodating four or five ocean steamers.

Several miles further down is the United States Naval Station, with its large floating dock. This dock is seldom used by the government for purposes of its own, and by consent of the government, when not used by government vessels, is utilized in repairing vessels of the merchant marine.

On the left bank of the river there are nearly five miles of public wharves, owned and operated by the Port Commission, and about one mile of private wharves owned by various railroads.

The public wharves are now being covered by steel sheds, so that freight may be loaded and unloaded in any kind of weather. About two miles of these sheds have already been constructed, and the remaining three miles will be covered within the next two years.

The mechanical appliances used for loading and unloading cargoes are the following: for sugar and molasses, a sort of endless chain contrivance is used, which carries the sugar and molasses between wharves and boats. The tropical fruit ships use an endless chain to which is attached at regular intervals pouches, into which bananas, etc., are placed, and carried from the

hold of the vessel to the wharf. As stated before, in most cases, spur tracks run from the main railroad tracks to the ship's side, to permit direct loading and unloading.

The City of New Orleans is now constructing a belt railroad system, which will encircle the entire city. It is already constructed along the river front for a distance of about eight miles, serving almost all the wharves along the left bank. It is owned entirely by the City of New Orleans, and will be controlled and operated by the city government. It is now in partial operation and will be in full operation within a year. When completed it will connect all the railroads, and will be a cheap and rapid method of transferring cars from one railroad system to another, and to the wharves.

Ownership of Docks or Wharves.—The ownership of wharves is vested in the State of Louisiana, and they are controlled and managed by the Board of Port Commissioners appointed by the Governor of the state. This board makes rates, subject, however, to the control of the legislature. Under legislative authority, the port commission prescribes all the rules and regulations for loading and unloading of vessels and for everything connected with the commerce of New Orleans, in so far as use of the wharves is concerned. The board is composed of five members, who are appointed for terms of five years each, in such a manner that not more than one commissioner's term of office expires each year. Previous to the appointment of this board, these wharves were leased to private individuals who used them as a source of private enrichment. The board uses the revenues solely in improvement of the wharves and extension of port facilities. The board is composed of prominent merchants and business men, and has given full satisfaction. The members receive no compensation, but, of course, their subordinates do. These subordinates perform their work well, and little or no complaint is ever heard against them.

Its employees comprise a superintendent and a secretary who receive each an annual salary of \$3,000; two engineers, receiving annual salaries of \$2,400 and \$1,600 respectively. In addition there are four deputy commissioners and one collector, a superintendent of construction, a bookkeeper and twelve other employees, inspectors, messengers and assistants. The total cost of administration is less than \$35,000 per annum. The board also maintains a patrol system of policemen, under the special control and pay of the board, at a cost of about \$22,000 per annum.

Nature of Charges for Services.—There is no charge whatever on the cargoes entering this port, but there are charges for wharfage which are levied on tonnage, and they are as follows: Ocean vessels, two cents per ton per day for the first three days, one cent per ton per day for the next three days, thereafter free for a period of thirty days. Where sheds are provided an additional charge of one and one-half cents per ton is made. All of the above charges are based upon the gross tonnage.

There are also charged harbor dues of \$2.50 for vessels under 100 tons, \$5.00 for vessels from 100 to 500 tons, and \$10.00 for vessels over 500 tons. A charge of \$1.00 is also made for each copy of certificate issued, for the inspection of hatches, surveys or cargoes, etc. The masters of each ves-

however, are furnished free one copy of all surveys upon their respective vessels or cargoes.

For river steamers, barges, luggers and other craft, using the wharves for not more than five days, a charge of six cents per ton is made, and for each day after said period of five days a charge of \$3.00 per day is made. Steamboats, etc., arriving and departing more than once a week are charged three cents per ton each trip. These charges are collected from the owners of the vessels, by the collectors of the port commissioners.

For the year ending August 31, 1906, the receipts from sea-going vessels were \$205,403.52 for wharfage, and for shed charges \$14,906.11, the total receipts from all sources during the year, ending August 31, 1906, were \$278,113.79. Balance on hand December 31, 1905, \$396,878.38. The disbursements were \$646,888.63; the greater part of these disbursements was for permanent improvements, such as sheds, wharves, etc., and to pay for real estate fronting on the river; the balance on hand in December, 1905 was principally composed of proceeds of the sale of bonds issued during the year before for the purpose of making improvements.

There is no income from rentals, leases, etc., all the income being from the sources just stated. All the funds received are used for the improvement and extension of harbor facilities, and for the redemption fund to retire the bonds, which were issued for the improvement of the wharves.

Suggestions for the Improvements of the Harbor.—The United States Government appropriates every year a considerable sum for keeping the harbor in condition. The Mississippi River is a peculiar stream; its banks are lined with levees which in the City of New Orleans rise several feet above the city proper, and the wharves are usually built on the river slope and extend over these levees. In the commercial part of the city, the levees are very wide and slope gradually so that the levee is hardly apparent to the view.

The changing current and eddies of the river, frequently after a high stage of water, make shoals of places where a week previous there were fifty feet of water. The port commissioners keep a dredge boat continually at work, taking away the silt and other deposits that accumulate. It also maintains a fire boat, whose services are given free of charge to any vessel or any dock on fire.

The port commission has been authorized to issue \$2,000,000 of bonds to build sheds, wharves, paved approaches, and other port improvements. It has issued so far but \$750,000 of these bonds, and has well under way a comprehensive system of sheds, approaches and wharf construction which will, within the next five years, make the harbor of New Orleans second to none in the country. What is now needed is for the United States Government to improve the river's mouth and banks so that there may be no obstruction there. Improvements now going on at South West Pass—the largest of the river's mouths—will soon give us another fine ocean outlet, through which the largest ships afloat can enter the Mississippi.

Altogether, the vast strides our local commerce is making, and the greater impulse that will be given by the construction of the Panama Canal, and the impetus already felt from the rapid increase of railroad terminal facilities

here, are doing wonders for New Orleans. The commercial and manufacturing interests have reason to congratulate themselves that the control and management of the harbor and port facilities that mean so much for local progress, are now taken out of politics and in control of practical and far-sighted commercial men, fully alive and equipped for the work they have undertaken.

DETROIT

By **DELOS F. WILCOX, PH.D.**, Secretary Municipal League, Detroit, Mich.

The most notable characteristic of the water traffic at Detroit is the passenger service. This is the home port of regular and excursion steamers to Buffalo, Cleveland, Put-in-Bay, Toledo, the river islands, Chatham, St. Clair Flats, Port Huron, Alpena, St. Ignace and Mackinac. The number of excursion passengers carried is larger than from all the other lower lake ports combined.

The passenger steamers also carry large quantities of baggage and merchandise freight. As regards bulk freight, very little coal comes to this port by water; the iron ore receipts are not more than three or four million tons a year; a considerable portion of the lumber supply is brought by vessels owned by the dealers; the grain shipments eastward amount to eight or ten million bushels a year.

The harbor consists of about nine miles of water front on the Detroit River and four on the River Rouge. The dock line on Detroit River is nearly straight, with from twenty to forty feet depth of water. There are no mechanical devices furnished for unloading cargoes except in the case of coal and ore.

The city owns docks at the water works, public lighting plant, Owen Park, Belle Isle Bridge, and the Western Boulevard, although none of these except the first two are used very much as docks. The city also owns docks at the foot of three or four streets, but receives no rental from them. The rest of, and nearly all, the docks are private property.

The harbor master in Detroit is an officer appointed by the police department. No vessel may be unloaded at the public wharves without his permission. He is authorized to protect the owners and occupants of wharves and docks in the free use of them. He has authority to regulate the anchorage of vessels and to give directions relative to the location, change of station of steamboats or other vessels as the necessity of trade and navigation may demand, with due respect to the rights of occupants of wharves. In case any boat, vessel or wreck is sunk or deposited intentionally by its owner or the person in charge at any point in the Detroit River within the limits of the city so as to obstruct navigation, the harbor master must notify the owner or agent having control of the property to remove it, and if it is not removed to cause it to be taken away at the expense of the delinquent party.

WASHINGTON, D. C.

By DANIEL E. GARGES, Secretary, Committee on Wharves, District of Columbia.

The City of Washington is situated on the eastern bank of the Potomac River, 106 miles from its mouth and about 185 miles, via the river and Chesapeake Bay, from the Atlantic Ocean. The main branch of the river forms the southwestern boundary of the city, and it is joined from the east about three miles north of the southern apex of the District of Columbia by the eastern branch or Anacostia River, which flows through the District of Columbia in a southwesterly direction to that point. The river is navigable for vessels of comparatively light draught, but the channel is tortuous, the prevailing depth being about thirty feet.

There are about four miles of harbor frontage. The traffic consists of produce and small freight and also ice, wood, coal, lumber, etc. The amount of freight entering and leaving the port is about 878,823 tons per year.

The river in front of the city divides into the Washington channel, the Georgetown channel and the eastern branch. The wharf property along the Washington channel is owned by the United States and is under the control of the Commissioners of the District of Columbia. The wharves are leased to steamboat companies and commercial concerns, and the annual rental amounts to about \$16,000. The wharf property along the Georgetown channel is owned by private parties. The ownership of the wharf property along the eastern branch is an unsettled question. The Washington channel, where most of the shipping is done, has a Water Street front from 80 to 100 feet wide, which gives ample facilities for handling all shipping.

The matter of patrolling the harbor is under the police department and directly in charge of the harbor master, a lieutenant of the police force, whose duties are to see to the proper movement of vessels in the harbor and a general policing of the same. The matter of leasing the property is in charge of a committee on wharves, appointed by the Commissioners of the District of Columbia. All funds received from leases are deposited as revenues, one-half of which go to the District of Columbia, a municipal corporation, and the other half into the Treasury of the United States.

The water front of the City of Washington is in much need of improvement. The Congress of the United States, which makes all appropriations for the expenses of the government of the District of Columbia, has recognized this by providing an appropriation for the preparation of plans and a survey of the water front, with a view to its improvement. These plans are now in course of preparation, though no plan of treatment has yet been definitely decided upon. It is probable, however, that the entire water front owned by the United States will be reconstructed with concrete docks on piles; that the channel will be widened to admit of additional harbor and shipping facilities, and that the Water Street will be widened. The plans will possibly involve the expenditure of a million dollars. Among the features under consideration is a municipal dock with a recreation pier.

PROVIDENCE

By FRANK E. LAKEY, Providence, R. I.

The character of the shipping entering this port is chiefly coastwise. With the exception of an occasional two-master to the Cape Verde Islands, there is no transoceanic trade. Salt from Turks Island, and lumber from Nova Scotia, comprise the chief direct imports. For the year ending December 31, 1906, the harbor master reports 11,582 vessels as arriving, of which the steamers number 3,533; tugs, 3,221; barges, 1,535, and oyster boats, 2,915. The local excursion transportation is large and probably makes up the bulk of the 1,134,461 passengers carried last year by steamers. For some years two daily steamboats have left for New York. Recently two other boats have been added. A line runs to Norfolk, Va., also. The total merchandise for the year was 3,086,000 tons, of which that brought by steamers was 753,465 tons. The ten other chief items were: Coal, 2,133,772 (due to the extensive mills of Providence and vicinity, making over two-thirds of all merchandise received); oil, 43,209 tons (12,451,332 gallons); oysters and oyster shells, 43,081 tons; lumber, 31,531 tons (32,628,290 feet); iron, 8,166 tons; ice, 8,125 tons; brick, 8,012 tons; pipes, 6,574 tons; chemicals, 4,971 tons; salt, 4,140 tons; cement, 4,455. Thus the trade, exclusive of coal, is seen to be relatively small, despite the natural advantages of the bay and harbor.

The nature and extent of the harbor requires account to be taken of Narragansett Bay. This bay is 25.34 miles long, 7.39 miles middle width. Its tide-flowed area is 134.8 square miles, of which about 71.4 square miles are channels and possible anchorage grounds. Two main ship channels, with a third reaching part way to Providence, "have twenty-five feet at mean low water, and could be entered from the sea by the largest vessels without a pilot." With so secure a land-locked harbor, easy of access, with good railway facilities on both sides of the bay and in all directions, and immense and varied manufactured output, "Providence has peculiar advantages of location as an importing and exporting station, especially with reference to Atlantic coastwise traffic south of Cape Cod." The United States Government is at work enlarging the anchorage grounds to an area of 171 acres, with a depth of twenty-five feet at mean low water.

The condition of the water front at the present time is encouraging only in the possibilities of the future. Much can be done to develop and attract trade. Nature has been kind, but for the 300,000 or more persons within ten miles of the City Hall the amount of the marine transactions is not an object of boasting.

The facilities for handling cargoes are good, but crowded. Spur tracks run on the docks, reducing the handling to a minimum. The proposed system of docks on both sides of the harbor will have spur tracks on each dock. Easy connections north, west and south can be made with the main lines of railways without grade crossings.

The wharves of Providence are all private property and are used for specific purposes. Agitation from time to time for public wharves as yet

has borne no fruit. The management of the harbor is in the hands of three harbor commissioners, elected by the legislature, and a harbor master, elected by the city council. The excellence of the service of the chairman of the commission is attested by his incumbency for thirty consecutive years—since its organization, in 1877. The income from rentals, leases, etc., cannot be ascertained, since it is purely a private matter.

The future improvement of the harbor and bay presents brilliant prospects. By act of the legislature \$400,000 has been voted. This has never been appropriated. The state is to be asked to submit a proposition to the voters to issue \$500,000 state bonds for harbor improvement. By act of Congress, passed in 1906, \$750,000 was appropriated for Narragansett Bay and Point Judith Breakwater. Of this amount \$500,000 is to be spent above Providence Island, *i. e.*, anchorage for Providence, to make an anchorage twenty-five feet deep at mean low water and 400 feet wide, with two wide channels direct to the sea. Thus \$1,650,000 will, in all probability, be soon available for the harbor and bay. The channel of the Seekouk River has been straightened and deepened, rendering easier access to the City of Pawtucket. When the railroad bridge over this river (which lies directly east of Providence) is completed, other changes are planned which will add greatly to the usefulness of this river.

The Harbor Improvement Commission, composed of some of the ablest men in the state, and appointed by the legislature, in their report for 1906 say, "Experience and the process of reasoning both seem to indicate that the welfare of the public requires the public ownership and control of at least a part of the shore, with wharves, slips and terminal facilities thereon." It is suggested that the state improve one or two wharves at a time and lease for fifteen-year terms. "Thirty per cent of the water front could be thus held and controlled for the public use and benefit." A fifty-year three per cent harbor improvement bond could be placed, and, in the opinion of the commission, not only would no burden result, but the amount needed to be raised by general taxes would be lessened. If the proposed canal connecting Narragansett Bay and Boston harbor were built, the necessity for the improvement of the harbor would be increased. In twenty-six years the route around Cape Cod has claimed 1,233 wrecks, at an average yearly property loss of over \$500,000, and a yearly sacrifice of thirty lives.

WILMINGTON

By WILLIAM COYNE and JOHN N. LAWSON, JR., Wilmington, Del.

Wilmington is the headquarters of the largest powder and explosive manufacturing company, has the largest car wheel manufacturing plant, the largest patent leather plant, and two of the largest morocco leather plants in the world. Last year its commerce by water amounted to \$72,000,000, and by rail to \$120,000,000, a total of \$192,000,000, or \$2,230 per capita, which indicates its commercial importance and its need of water and rail facilities.

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Wilmington has three rivers, the Brandywine, Christiana and Delaware. The Delaware flows along its eastern border three miles. The Christiana, which flows through the manufacturing district, entering the Delaware midway between the northern and southern borders of the city, has a channel 18 by 150 feet at low water for three miles from its mouth. The Brandywine flows into the Christiana three-quarters of a mile from its mouth and has a channel 7 by 60 feet at low water for one and a half miles.

The national government is bulkheading the Delaware one and a half miles along the eastern city line. When completed, there will be seventeen feet of water at low tide along the bulkhead, gradually deepening to the main channel, which is 400 feet from the bulkheading. The national government is now dredging the Delaware main channel to make a 30 by 600 feet channel at low water from the sea to Philadelphia, it being to-day less than twenty-eight feet deep at low water.

The theory of the United States engineers is that bulkheading at Wilmington will so narrow and increase the current that the 30 by 600 feet channel will be maintained without future dredging. This will tend to deepen the water between the bulkheading and the main channel, but if it does not, little dredging will be required to enable the deepest draft vessels to lie alongside the bulkheading. Material taken from the channel is being used to fill behind the bulkheading, thus, without any expense to the city, providing a wharfage front of one and a half miles on deepwater. The water front is easily accessible to any of the three railway systems that serve the city, the Pennsylvania, Baltimore and Ohio, and Philadelphia and Reading (all are close to the water front), or to any other interests seeking a safe, commodious ocean port.

If the government does not extend the bulkheading further down the river, private or municipal enterprise can, with but little outlay, provide the additional bulkheading required to make the entire three miles of Delaware River frontage one long deep water wharf.

Wilmington is within seventy-two miles of the sea, and there would seem no good reason why, with an immediately prospective deep water frontage of one and one half miles, and Christiana River frontage of six miles of eighteen feet depth at low water, it should not provide adequate rail and water facilities for a manufacturing community of a million people in the near future.

At present the shipping, entering or leaving the port, is confined to passenger and freight lines running between Wilmington and Philadelphia, Wilmington and New Jersey coast points, a freight line between Wilmington and New York, and numerous coastwise vessels of all descriptions, engaged in transporting raw materials to and finished products from its numerous industries. Ocean steamers of deep draft are discharged or loaded in the Delaware River by the use of car-floats or lighters. Thirty to forty such vessels are discharged and an equal number loaded annually. The Philadelphia and Reading Railway maintains a car-float system, serving numerous industries up and down the Delaware from Wilmington. All cargoes are handled to and from vessels by hand or winches.

The city owns eight docks, averaging fifty feet in length, along the Christiana on the eighteen foot channel, which it leases for an annual rental of \$100 per dock. The lessees use the docks for their private business. Leases are for three-year periods. Nearly all lessees will, for a nominal charge, allow goods to be handled over their docks, so long as it does not interfere with their business. Along the eighteen foot channel of the Christiana River front 15,000 feet are owned and used by industries that have more or less dockage facilities. Practically 20,000 feet of the Christiana River frontage toward its mouth is unoccupied. The present plan is to narrow the Christiana channel by building wharves or piers, and thus increase the current so that little or no dredging will ever be required.

The proposed deep water canal between Delaware River and Chesapeake Bay will be of almost immeasurable importance to the shipping and commercial interests of Pennsylvania, New Jersey, Delaware, Maryland, Virginia, North and South Carolina. Wilmington will reap its proportional benefit.

Wilmington waters are under the control of a board of port wardens, elected by the city councils annually; they, in turn, appoint a harbor master, whose duties are to see that nothing is done to disturb the channels or commerce, to regulate speeds and to settle differences. The duties of all are well performed.

There seems to be splendid opportunity for the municipality of Wilmington to acquire all the frontage along the Christiana and Delaware Rivers not occupied, improving it by erecting wharves, piers and docking facilities as necessity therefor arises, and leasing them at low rates to either private or public enterprises. So situated, the city would be able not only to recoup itself on the investment and provide a continued source of revenue, but would have the immense advantage of being able to offer inducements to large manufacturing or transportation interests, to whom deep water transportation, added to adequate railroad facilities, is of paramount importance. The rail and water facilities of the larger coast cities of the United States are to-day abnormally congested. This congestion is growing daily. The present seems, therefore, a most opportune time for cities situated like Wilmington to condemn and acquire, at a reasonable figure, wharfage property that will, with improvement, be of immeasurable value.

DULUTH

By ALFRED MCCALLUM, Duluth, Minn.

During the "Glacial Period" Lake Superior was fully 500 feet higher than it is at present. The action of the waves, at that time, brought about that peculiar formation known as Minnesota Point, which forms a natural breakwater for the bays of Superior, St. Louis and Allouez, which are the Duluth-Superior harbor. This strip of land is fully nine miles in length, extending from Duluth to the Wisconsin shore. It is cut by two canals a trifle over six miles apart, known as the Duluth Ship Canal and the Superior

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Entry. The Duluth Ship Canal was originally built by the City of Duluth in 1871; was rebuilt and enlarged by the United States Government in 1898-1901 at a cost of \$650,000. The Superior Entry was originally the outlet of the St. Louis River and was a winding channel over a shifting sandbar, with an available depth of nine to eleven feet and difficult to follow. This canal was originally constructed with timber piers at the site of the natural entrance in 1867-1875. Reconstruction with concrete piers commenced in 1903 and is now in progress. The estimated cost of reconstruction is over \$1,000,000. Through these two arteries of commerce passed last year (1906) a tonnage of 29,171,221 short tons, valued at \$251,894,844, being an increase over the previous year of 28.64 per cent, and an increase over the year 1890 of 924 per cent. This enormous tonnage would provide 3,000 cargoes for the largest freighter on the lakes, and would furnish loads for all the cars that could be gotten on a three-track railway extending from New York to San Francisco, with cars of a capacity of 40,000 pounds.

Major Graham D. Fitch, in charge of harbor improvements on Lake Superior, in his annual report, just completed, says: "It is impossible to give precise figures of the marine commerce of the principal ports of the United States for comparison with the Duluth-Superior harbor, for the reason that at ocean ports of the United States, as well as of foreign countries, no record of domestic tonnage is kept at the custom houses, whereas, on the Great Lakes, a record is kept of the total marine commerce, both foreign and domestic. In the principal ocean ports of the United States the tonnage of the local and coastwise (domestic) marine commerce is several times greater than that of the foreign."

Any comparison, therefore, of the relative marine commerce of lake and ocean ports, based solely on custom house records, is, for the reason stated, incorrect and misleading.

The navigation season for the Duluth-Superior harbor averages only about eight months per annum, while for ocean ports navigation is carried on during twelve months. Considering the mean monthly freight movement during the season of navigation, Duluth-Superior harbor practically stands next to New York.

The strategic position of Duluth in the world of commerce is due to this magnificent landlocked harbor, stretching away from the ship canal a distance of five miles to West Duluth for the larger vessels and then on to New Duluth, through the St. Louis River, for vessels of lighter draft.

Before being improved the harbor was a broad expanse of shallow water, with a general depth of only eight or nine feet, except along the channels, which were deeper, but variable. A great deal of money has been expended on these channels by the government. By an act of Congress in 1896 contracts were let for the removal of 21,000,000 yards of earth at an estimated cost of \$3,130,553, this being the largest dredging contract ever let in the United States. The operations just described have given fully seventeen miles of dredged channels from 120 to 600 feet wide and basins of an aggregate area of about 360 acres. The general depth is twenty-two feet, and no part of the dredged area has a less depth than twenty feet at low water. This work

gave us a harbor frontage of forty-nine miles, lined with docks equipped for the loading and unloading of almost every kind of merchandise. Every year millions of feet of logs are rafted through the canals to be sawed into lumber at the local mills and then loaded on vessels for transportation to lower lake ports. There are numerous coal docks equipped with the most modern machinery for the speedy and economical unloading of vessels, the coal to be again loaded on cars for distribution to the great Northwest. The railroad docks are equipped for the handling of package freight, and grain with which the elevators are full to bursting at this season of the year from the farms of Minnesota, the Dakotas and even from the Canadian Alberta country. Last and greatest come the iron ore docks, from which was loaded last year 19,368,186 tons, with a valuation of \$48,420,464. This mineral makes up about two-thirds of the total tonnage of the Duluth-Superior harbor.

The city's interest in the harbor is looked after by a harbor matser, who performs his duties in a satisfactory manner. He has to decide between vessels their right to a certain dock, to prevent the obstruction of slips by vessels laying at the head of a dock, to prevent dumping ashes in the bay, and to take care of the city's interest in the harbor generally.

The municipal docks, of which there are several, are built at the end of streets or avenues, and are used principally for ferry purposes. They are kept up by the city, and no revenue is collected for their use.

The water of the St. Louis River is diverted at Thompson by the Great Northern Power Company, who have developed 30,000 electrical horse-power under a fall of 378 feet. This has been brought to Duluth and is now almost ready for distribution. The company expect ultimately to develop and install an additional 110,000 horse-power to operate under a fall of 740 feet. What this will eventually mean to the financial, commercial and shipping interests of Duluth can more readily be understood when it is known that less than 20,000 horse-power is used at the head of the lakes to-day.

The widening of the entry of the Duluth Ship Canal allows the waves a greater sweep into Superior Bay, and as a result, when a northeast wind is blowing, which is the prevailing wind at certain seasons of the year, boats find it next to impossible to lie at their docks. One boat last year broke fifteen six and one-half inch lines while unloading her cargo. This condition has made a problem which the government engineers are attempting to solve. Several schemes have been proposed, but the one that seems to meet with the greatest favor here is that of constructing a breakwater about a mile from the canal to extend from the land a sufficient distance out into the lake to protect the entrance to the harbor.

No description of the harbor would be complete without some mention of the Aerial Bridge, which spans the Duluth Ship Canal at Lake Avenue. and is the only one of its kind in the world. Before the bridge was built transportation was done by ferry, which was inadequate and expensive. Many different kinds of bridges were suggested to the government engineers. but none met with their approval, as they were likely to interfere with navigation. After receiving suggestions from others, Thomas F. McGilvray,

city engineer, finally evolved the present plan, which was accepted by the government engineers.

The opening between towers, which signifies practically the length of the bridge, is 394 feet. The lower truss of the bridge is 135 feet from the water and the upper chord is 185 feet above water level. Its actual weight is 3,337,000 pounds, and it cost \$108,000. The car will hold 400 people and four teams and is operated by means of a trolley wire and a cable, which is wound around a steel drum, the controllers and motors being aboard of the car.

The cheapness of freight rates by water gives Duluth the key to the situation as a distributing point, and will eventually build up here the largest wholesale center for that great empire of the Northwest.

TAMPA

By J. D. CALHOUN, Secretary of Board of Trade, Tampa, Fla.

There are four ports located on Tampa Bay—Port Tampa, Tampa, St. Petersburg and the Manatee River—naming them in the order of their present dimensions, business and activity. For all practical purposes only the two first named need consideration here. Port Tampa is located on Old Tampa Bay, nine miles southward from the city. The port of the city itself is located on the upper end of Hillsborough Bay and along the Hillsborough River for perhaps four thousand feet above the mouth. This port is undergoing enlargement and development to a depth of twenty feet in its channel and slips, with the erection of a complete system of commercial terminal facilities—a work which will be practically completed within a year.

Both these harbors are completely landlocked and sheltered from wind and wave, and are situated inland respectively twenty-nine and thirty-eight miles from the Gulf. The facilities of Port Tampa are complete in every essential respect, and vessels drawing twenty-four feet of water may anchor in the slips. The water front is in the best and most improved condition, and the facilities for handling cargoes are sufficient and modern. This same description will apply to the immediate harbor of Tampa within a year—with the exception that the channel depth will be but twenty feet.

The number of seagoing vessels arriving and departing from Port Tampa during the year 1906 was 903, with merchandise tonnage of 968,951 tons, of which 529,268 was phosphate for export.

The commerce of Hillsborough Bay, being more largely local, was carried on by smaller vessels and marked by much greater activity. The number of arrivals and departures was 2,147 and 2,143, respectively, and the actual tonnage of merchandise conveyed was 432,981.

The ownership of docks and wharves is private in both ports—the Atlantic Coast Line Railway, by a subsidiary company, owning the facilities at Port Tampa, and the Seaboard Air Line Railway being engaged in the

work of enlargement and construction at Tampa. At Tampa there are many commercial houses owning their own frontage and facilities for shipping, these facilities being necessarily somewhat crude.

The maintenance of condition is a matter attended to by the owners, except that the government maintains the condition of the various channels which it constructed. This is almost a negligible item, on account of its smallness.

The harbor officers consist of a harbor master and six pilots, with a practically nominal commission for the selection of the master and pilots—the harbor master, however, being actually designated by the governor of the state. He has no specific salary, but it is understood that he receives compensation from the pilots' association. The duties of the harbor master are very slight. The pilots are efficient. Their charges are collected from the vessels employing their services, and such service is compulsory with few exceptions. Charges for towage are a matter of private arrangement between the tugs and the vessels employing them.

The wharf business being entirely private—except as the Atlantic Coast Line is required to publish a schedule of charges—there is no way of ascertaining the sum of the moneys received from charges, rentals, etc., or the disposition of the same.

As regards the improvement of the harbors and bettering the facilities for commerce, the situation is such that there is nothing needed which does not promise soon to be supplied. With the increase of traffic that will be developed by the deeper channel and early improvements at Tampa there will doubtless be a demand for an increased depth of the channel. A need common to the entire bay is a depth of thirty feet, with a width of 300 feet over the outer bar at Egmont Pass, and a gradual deepening of all inside channels and slips to a like depth as the requirements of commerce demand.

FOREIGN CITIES.

LONDON, ENGLAND

By PROF. J. RUSSELL SMITH, University of Pennsylvania

Almost every city in the whole world having any great commercial importance has a port problem demanding that something shall be done for the improvement of existing conditions. It has come about through the territorial division of labor which has caused the bulk of foreign commerce to increase tremendously and continuously in every quarter of the globe. Along with this growth of trade has been a growth in the size of the ships, commanding not only more space, but also, what is of even greater cost, more depth.

Great Britain, being the leader in nineteenth century commerce, had the port problem to meet and settle earlier than other countries, and it met the situation in the first half of the nineteenth century by private enterprise.

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Scores of dock companies were formed to improve the various ports, sometimes several of them in one port. These were private corporations seeking profits, just as a railway or any other transportation company does. Unfortunately for these investors, the conditions did not favor the permanent success of their enterprise; for a few decades all went well, and then the mid-century spurt of British commerce caused them to become inadequate. The introduction of the steamer also made many of the docks out of date, because a large new vessel could not enter the old dock. The increase in trade and increase of steamer size caused a general breakdown of the old private dock companies, and some kind of a port reorganization problem faced most of the British cities in the decade 1850-1860.

The problem was a much more difficult one than it would have been in America, because of the physical peculiarities of the British streams and harbors. The coast of that country is swept by a tide of such great height that, while a modern vessel can enter almost any river at high tide, at low tide, owing to the great fall of water, the vessel lies in the harbor subject to strains which modern shipping cannot resist. Some artificial body of water must, therefore, be prepared in which the vessel can lie in safety at low tide. This difficulty was met by the building of so-called wet docks, which are almost invariable excavations in the lowlands along the bank of the river, which excavations must be walled up and can be entered only through lock gates such as are used in ship canals.

It is interesting to note that one British port did not demand reorganization in the decade 1850-60. This was London, where the old private companies were able to improve their facilities and meet the demands which had wrecked scores of similar companies in other British ports. The greater strength of the London companies was due to the fact that the vast commerce of London had enabled them to become strong, and the very high value of the commerce of the city, which was the European distributing point for the valuable commerce of the East, enabled the companies to lay heavier dues than could be borne by the bulkier and less valuable commerce of other cities. But the end of the London private companies is near at hand. The commercial interests of the city and of the empire are united in the demand for more facilities; the existing authorities are alike united in their inability to meet them. Something must be done to improve the port of the greatest city in the world, which is now being sapped because of her inadequate facilities for the receipt of ships.

The present deadlock furnishes an interesting example of the way the British have in the past managed their harbors. There are no less than four private interests doing work which, in Germany, and to a considerable extent in America, would be done by an arm of government.

(1) The first of these is Trinity House, an old corporation grown from a mediæval guild of pilots, located on the Lower Thames. It has gradually changed its character through the centuries, and now has, in addition to the authority over pilots, the work of lighting and buoysing the channel of the Thames, and is also the lighthouse authority for the coast of England, Wales and Gibraltar. While it has absolute power over the pilots and

lights of the river that reach to London, it is a close corporation in which the senior members, the "Elder Brethren," fill their own vacancies from the junior or "Younger Brethren," and also elect outsiders to fill this lower branch of their membership.

(2) There is considerable danger of confusion and trouble because of the lack of co-operation between the activities of the Trinity House and the Thames Conservancy Board, which is the channel deepening body of the River Thames. This board is the creation of Parliament and represents the one important step taken in the 50's (1857) to enable London to meet the increased demands of free trade commerce. This body has charge of deepening the channel, regulates vessels within the port, licenses docks and piers, and makes any needed by-laws for the control of shipping in the harbor.

Its revenues come from the dues paid by vessels passing up and down the Thames, but its funds are entirely inadequate for the great improvements that are needed in the harbor.

(3) If the channel could be deepened so that the greatest ship could come to London, there is no dock in which she could lie. The old companies which prospered from 1800 to 1880 have done their best and can do no more. Under the régime of competition they had, in the latter part of the last century, severe rate wars and also made great financial sacrifices to build new and improved docks. Through consolidations there came to be but two strong companies in 1880. In 1888 these two companies came to a working understanding and stopped competing with each other; they were finally consolidated into one management in 1900, but all to no avail. Their dividends have ceased, their financial condition is hopeless and Parliament will not permit them to charge heavier dues, and if they could the commerce would probably not stand it. If they could get the greatest ship in the world to reach their gates, the dock companies could not make a berth for it, and they are inadequate for those that now enter. There is great confusion in the delivery of the goods. Two and even three cargoes sometimes lie upon the quays and wait for the lighters to come carry them away.

(4) The fourth individual factor in London is the Watermen's Company, which has the control over all the boats in the harbor. Nearly all the goods coming into the port are handled at least once in a lighter. These, with the river boats, make a total of over 12,000 craft, and these craft can be run only by a man licensed by the Watermen's Company. This company is the present form of a sixteenth century guild of Queen Elizabeth's time that then had a monopoly of running rowboats within the city limits on the River Thames. It was necessary for such a man to be a good oarsman, and he therefore became a member of the guild only through membership, and to this day the man who runs a scow or steamer on the River Thames must have passed his apprenticeship in the Watermen's Company.

Of these four individual powers the three whose functions require the spending of money are bankrupt, and the fourth has arbitrary power which is rather easy in the present day of trade unionism to abuse. A royal commission has investigated this matter for two years, and has recommended

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to Parliament the creation of a public trust. This characteristic of British institutions would combine the functions of all bodies now having any authority over the port of London. It would eliminate private profit and, through the disappearance of the hope of dividends, it could lessen its expenses by borrowing money upon the security of the port. The proposed composition of the board shows the compromise element in British institutions. The members are to be appointed as follows:

	<i>Members.</i>
(a) By the London County Council	11
(b) By the City Corporation	3
(c) By the Admiralty	1
(d) By the Board of Trade	1
(e) By the Trinity House	1
(f) By the Kent County Council	1
(g) By the Essex County Council	1
(h) By the London Chamber of Commerce	2
(i) By the Governors of the Bank England, from among persons belonging to the mercantile community of London.	5

The elected members should be elected by different groups of voters, viz.:

	<i>Members.</i>
(j) By the oversea (or ocean) trading shipowners	5
(k) By the short sea-trading shipowners	2
(l) By the wharfingers and owners of private warehouses on the river	3
(m) By owners of lighters, barges and river craft, including river passenger steamers	2
(n) By railway companies connecting with the docks	2

"The electing persons, firms or companies should be given a number of votes, varying according to the amounts paid in dues upon goods, or upon shipping, as the case may be."

This is much like the manner of conducting the harbors of Liverpool and Glasgow, where such public trusts have done a great work and given much satisfaction. This is partly due, doubtless, to the character of the men who sit upon the boards of control. It is an honor to be elected; they serve without pay, as do the trustees of American universities. Unfortunately for London, the interests within the port are not all satisfied with the proposed public trust arrangement and the bill has been defeated. Parliament and London still waits and wrestles with her problem which *must* be solved.

MANCHESTER, ENGLAND

By ERNEST SMITH BRADFORD, University of Pennsylvania

Manchester presents the case of the operation of a ship canal as well as docks.

As will be recalled, the city lies inland, thirty-five miles from Liverpool, on a branch of the Mersey River, the center of "the greatest cotton manufacturing area in the world." The population of the city itself in 1905 was 631,185, but it serves a vastly larger section as collecting and distributing point. The agitation to connect the city by canal with deep water, and thus free the city from the necessity of conducting all its export and import trade through Liverpool, where dock charges were increased by the cost of railway haulage to Manchester, began in 1882. A company was formed to carry out the enterprise; but after spending nearly all of its capital, \$50,000,000, found itself unable to proceed further. The City of Manchester came forward with a loan of \$25,000,000, and the work was finished, the canal and docks being opened for traffic January 1, 1894. The canal is thirty-five miles long and has four locks, as the Manchester wharves are sixty feet above sea level. Seagoing vessels drawing twenty-six feet can dock in the heart of the city, and the depth is being increased to twenty-eight feet.

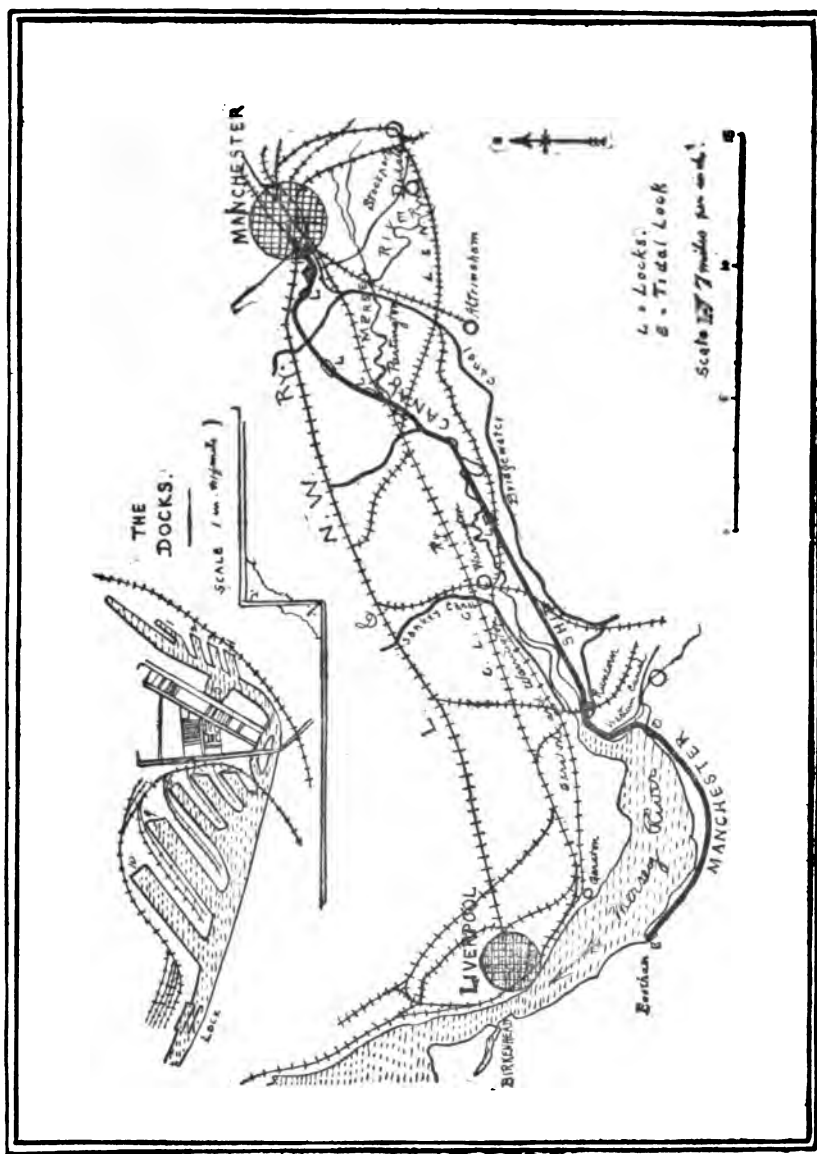
In return for the loan the city obtained control of the Manchester Ship Canal Company, electing eleven out of twenty-one directors, so that, although it is a mixed municipal and company enterprise as regards investment, its management is municipal. The taxpayers were assessed in 1897-8, to maintain the canal, a rate of 1 shilling 18-10 pence in the pound, a rate reduced in 1906, with the increasing business of the canal, to 4½ pence in the pound.

Below the board of directors, who have general control of the works, with their secretary and accountant, auditors, and firm of solicitors and bankers, the administration is divided between the ship canal department proper and the Bridgewater department, which operates the old Bridgewater Canal.

At the head of the ship canal department is a general superintendent, associated with whom is a chief traffic superintendent, an indoor superintendent and a railway traffic indoor superintendent. These are in the main dock office. For the docks there are a dock traffic superintendent, a railway superintendent, stores superintendent and police superintendent. There are, besides, a grain elevator superintendent, a coal superintendent (at Partington), a dockmaster and canal superintendent, and three district canal superintendents at Eastham, Latchford and Irlam. There are also chief and consulting engineers and assistants, land agents, an advertising agent, and representatives in Liverpool, London, Toronto and New York.

The Bridgewater department has a somewhat similar, though less extended, organization.

Under the control of these authorities are six miles of docks, with large warehouses; forty miles of railroad on the wharves and sixty-five more along the canal at various points—105 miles in all (1903) worked by the ship



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canal company, with freight cars and locomotives, tugs to assist steamers up and down the canal, locks and sluices, swing bridges and ferries, dredges and barges. Besides the cattle pens provided by the canal company for the coast-wise cattle trade, the City of Manchester directly has erected other needed cattle yards at the wharves, and owns a cold storage plant one and a half miles from the docks. The docks are lighted by electricity, goods being discharged and loaded frequently at night. The pilotage service is in the hands of a pilotage board, which examines and licenses pilots, though pilotage on the canal is not compulsory. The board consists of six members, elected by the canal company, and three pilots. There are about 1,200 permanent employees in the ship canal department, not including laborers by the day or by piece-work, and in the Bridgewater department, 2,500—3,700 in all.

At the beginning sweeping reductions in rates, both ways, were made by the ship canal, and competition forced the railways between Manchester and Liverpool to reduce their rates, also. At the same time, traffic increased both on canal and railways, consequent on the larger volume of business due to lower freights. The amount of sea-borne traffic passing through the locks in 1899 was 2,788,108 freight tons; in 1902, 3,137,348 tons; in 1904, 3,917,528 tons; while in the first half only of 1906, 2,112,000 tons, but the increased cost of handling was small in comparison. The expenses fell from 91 per cent of the receipts in 1897 to 60½ per cent in 1902. The financial results, so disappointing in the earlier years, have been much better since 1900. Along with larger cotton imports and exports have gone other items; wheat imports have increased from 4,356,000 bushels in 1901 to 8,741,600 bushels in 1904, "all of which trade," says United States Consul Hamm, of Hull, "has been captured from other ports, notably Hull and Liverpool." The canal has more than paid operating expenses since 1896; the interest on the city's stock, £5,000,000, has been met by taxes, the continual decrease of which has already been referred to, and which are likely to be soon entirely done away with, if the increase in receipts continues to exceed the increase in expenses. The private stockholders have had little return on their investment, however. The arrears of interest owing by the canal company January 1, 1905, amounted to nearly \$9,000,000, of which \$4,450,000 has been cancelled, and for the balance 3½ per cent preferred stock issued. From the standpoint of the shareholders in the company, the enterprise has not yet succeeded; from that of shipping interests and the general economic welfare of the city, it has been an undoubted success. Opinion as to the result of Manchester's experiment depends on the answer to the question whether city port facilities should be administered as a profit-making industry, such as city water works and lighting plants, or as the non-revenue producing factors, such as parks, sewers, streets and bridges.

HAMBURG AND BREMEN, GERMANY

By S. S. HUEBNER, Ph.D., University of Pennsylvania

Although the Imperial Government of Germany exercises a large measure of control over the merchant marine and over navigation on interstate waterways, it possesses, broadly speaking, no authority to construct or manage harbors, this function being intrusted solely to the care of the several states.

In Hamburg and Bremen the harbors are operated as state property, the work of construction being placed in the hands of a special department for this purpose and the general supervision and care of the harbor being exercised in Hamburg by a Department of Trade and Commerce and in Bremen by a Department for Harbors and Railways. Over these departments stands the Senate of the state, which exercises the ultimate executive power. All expenditures for purposes of construction and operation are borne by the two city-republics themselves, and are defrayed from general taxation. The receipts, on the other hand, are merged with the general income of the state, there being no necessary connection between the expenditures for harbors and the receipts derived therefrom.

In the case of each of these world-ports, the state either owns or controls the larger portion of the warehouse system. Bremen, for example, in return for a stipulated percentage of the net earnings, furnishes the ground and constructs the buildings, but does not interfere with the management of business activity of the system, except as regards the regulation of the warehouse dues. Hamburg, on the other hand, does not in the main assume the duty of constructing the buildings, but merely leases the ground for a certain percentage of the net earnings to a Free Harbor Warehouse Association. This association, while obliged to construct all necessary buildings and bear all financial losses, is, nevertheless, subject to a large measure of state control. To the Senate belongs the right of regulating the warehouse dues and of determining the nature of the buildings to be constructed. Likewise all acts which involve an increase in the capital stock or indebtedness of the association, or a change in its rules must be sanctioned by the Senate. Finally, the state is represented in the directorate of the association and possesses the power to suspend any act of that body until the Senate may have passed on its expediency.

What has been said concerning Hamburg and Bremen holds in a general way for the other German harbors. As a rule, their construction and management are intrusted to the care of local boards or commissions subject to the general supervision of the state; in Lubeck to a Board of Public Works and the police authority, in Rostock to a Board of Public Works, and in Wismar to a Harbor Department. In Prussia the management and improvement of harbors is conducted either under the supervision of the Board of Public Works for each respective city or by permanent commissions, which are local in character, but which must receive the sanction of the state as regards harbor improvements and other important changes. To be specific, all harbor matters in Stettin are managed by a Board of Public Works; in Kiel, by a Harbor Commission; in Flensburg by a Harbor and Bridge Commission; in Swinemuende, by a Royal Commission of Navigation

officiating as a local authority; and in Koenigsberg by a Royal Harbor Police Commission. The operating expenses, as a rule, are borne by the local communities and are defrayed from the harbor receipts.

Improvement of Harbor Channels.—During the last twenty-five years nearly all the leading seaports of Northwest Europe have exerted themselves to the utmost in an endeavor to adapt their facilities to the growing conditions of international trade. Indeed, practically all the leading ports, with the exception of London, have remained close rivals in this respect during the whole of this period. This strenuous competition may be attributed, first, to the rapidly increasing size and draught of ocean steamers, and, secondly, to the struggle between these ports for the Eastern trade and the consequent desire to accommodate ships of the Suez standard. The less anyone of these harbors is dependent upon the influence of tide, the greater is the advantage of that port. Hence any effort on the part of one harbor to deepen its channel or to improve its facilities for landing, loading and unloading, has resulted in a corresponding effort on the part of the other ports.

As regards the channel leading from the sea to the landing place, the German ports cannot be said to have been favored by nature. Whatever position these harbors now hold has been the result of vast labor and expenditure and the improvements have by no means been completed. Hamburg, until about 1850, possessed a channel measuring only from 4.0 to 4.3 meters in depth at high tide. At an enormous expenditure this depth has been increased to 8.3 meters, while arrangements have been made for a further increase of 1.7 meters. Bremen has also labored under unusual difficulties since its original channel measured only 2.5 meters in depth. After an outlay of some 50,000,000 marks, however, this city has secured a channel which can accommodate ocean-going vessels with a draught of six meters.

Improvement of Harbor Facilities.—The rivalry between the leading ports of Europe concerning the improvement of their channels also exists in the provision of basins, wharves, warehouses and other necessary equipment. Enormous sums have been paid by most of the ports in rendering easier and swifter the process of loading and unloading. Particularly is this true of Hamburg, nearly all of whose harbor facilities have been constructed during the last twenty years. Even as late as 1866 all sea-going vessels were obliged to anchor in the open stream, and the whole process of loading and unloading had to be conducted by means of lighters. About this time, Hamburg began the construction of a series of improvements with the result that to-day her system of docks and piers is reputed to be the best in existence, and her ship lines, according to Dr. Wiedenfeld, enjoy an ease of communication with the shore far superior to that furnished by the English ports.

Besides possessing probably the best system of warehouses in the world, Hamburg has made admirable connection with the railways and interior waterways. Separate harbor basins have been constructed for the numerous canal and river boats where they may remain to await the arrival of steamers. The steamer basins have been constructed with a view to making a swift transfer of freight to and from vessels the prime consideration, any gain

in this respect meaning of course a corresponding gain in the length of available piers. The wharves, besides being exceedingly spacious and built of durable material, are amply supplied with hydraulic machinery. At the present time the basins cover an area of 336.4 acres, while the total length of quays approximates 8.5 miles. Extensions are now being made, however, which will increase the area of the basins to 612.56 acres and the length of the quays to twelve miles. When this project is completed Hamburg will have spent some 180,000,000 marks since 1880 for its harbor facilities—of which sum the Imperial Government contributed 40,000,000 marks at the time of Hamburg's accession to the Customs Union—and this enormous outlay does not include the large sums expended in deepening and otherwise improving the channel, or in constructing the excellent system of warehouses. It only requires the further deepening of the channel, for which arrangements have already been made, and the completion of the extensions referred to above, to make Hamburg's harbor satisfy the highest requirements of modern efficiency.

What has been said of Hamburg is true of Bremen and the Dutch-Belgian ports, though on a smaller scale. In the provision of appliances for loading and unloading freight these harbors are practically on a par, and meet the latest requirements. In all, too, the construction of the harbor was so arranged that the new warehouses would be situated at once near the water and in the immediate vicinity of the large mercantile offices.

Limiting our discussion to the sums expended, it appears that subsequent to 1885 Bremen was paid in round numbers 93,800,000 marks for its harbor facilities, exclusive of the 50,000,000 marks devoted to the deepening of the channel. Of this sum the Imperial Government contributed 12,000,000 marks when Bremen joined the Customs Union in 1888 and 1,800,000 marks towards the construction of the Kaiserdock at Bremerhafen. Large sums have also been expended in Stettin, Danzig, Kiel, Emden and other smaller ports on the North Sea. Stettin, after an outlay of some 40,000,000 marks, has secured a harbor which is not only beginning to share in the American trade, but which, at the expense of Copenhagen and Gothenburg, is rapidly acquiring more and more of the Russian and Scandinavian trade. Altogether, it has been estimated that the several governments of Germany have devoted about \$125,000,000 since 1888 towards the improvement of harbors, and that of this sum about six-tenths has been used for the channel and other facilities of Hamburg alone. This single port, it has been said, "has spent more money than any other two harbors in the world together during the last score of years to perfect its technical facilities."

BARCELONA, SPAIN

By CHESTER LLOYD JONES, University of Pennsylvania

The rapid rise of Barcelona to commercial and industrial importance is the pride of every Spaniard who hopes for a brilliant future for his country. Nor is the satisfaction in the growth of the city unsupported by facts for few, if any, of the cities of south Europe can show such a

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remarkable rejuvenation as has taken place in the Spanish metropolis in the latter half of the nineteenth century.

The transformation of Barcelona from a fairly prosperous provincial capital to the industrial center of all Spain dates from about 1868 when it ceased to be a walled town and started on its present career of industrial development. Since that time the town has had a marvelous growth; it has doubled in area and its population has increased in hardly less a degree. The new city with its broad avenues and busy inhabitants furnishes a marked contrast to the contracted and idle towns of the south. The Catalan population, indeed, is remarkable for thrift, patience and industry, and well deserves the name often given them—the Germans of Spain.

Less than a decade passed after the beginning of the revival of Barcelona before the increase of the sea-going trade brought into notice the necessity of improved harbor facilities. The harbor of Barcelona—if the small indentation of the coast line could be called such—was shallow and exposed to hard winds from the east and southeast which made the handling of freight difficult at all times and especially during the rainy season. The plan of the harbor as then in use was the same as when originally laid out in 1474, and it was therefore entirely unsuited to accommodate modern shipping. The movement for improving the conditions culminated in 1880 in a plan for a harbor on truly modern lines. Too much credit can hardly be given to those who undertook the project for it meant practically the creation of an entirely new harbor in shallow water on a sandy coast that offered almost no natural advantages.

As planned in 1880 and since improved the harbor consists of two basins. Two long moles enclose it on the east and south, the coastline forming an irregular third side to the triangle. The inner and northern basin lying nearest to the heart of the city is even now unable to accommodate large sea-going vessels as its depth is only seven meters at the deepest point while the average is between five and six. Between the inner and the outer basins lie three moles two of which serve as docks, while upon the third one, which is detached, the office of the customs house is situated. By this arrangement the customs offices are almost in the center of the harbor. In the outer basin a floating dry dock is located which can accommodate medium sized vessels. In both basins it is planned to have a well developed comb of docks, those in the inner basin being already completed. Along the docks of the inner harbor spacious warehouses have now replaced the inadequate sheds which were formerly the only protection for goods needing storage. Nearly 1,500,000 square feet of storage space is now provided. In this built-up portion of the harbor there is a length of docks of over 13,000 feet with a width varying from 100 to 400 feet. The machinery for unloading has recently been much improved and is at present adequate for the needs of the port. The equipment includes, besides the numerous small portable cranes, seventeen hydraulic cranes of twenty-five tons capacity, two floating cranes of twenty-five tons and one of eighty tons. An electric grain elevator has also recently been installed. But little progress has been made in building up the comb-docks in the outer basin and consequently the commerce in

vessels of deeper draft is still hampered by lack of space necessitating delays in unloading upon the shore wharves.

The depth of the water in the outer basin varies from seven to fifteen meters. Systematic dredging has improved the center of the area to a depth of ten meters, but the lack of sufficient water continues to be one of the greatest hindrances to the satisfactory management of the deep-sea traffic.

The rapid development of the city has already given indication that the harbor, even when deepened satisfactorily, will still remain inadequate, and a new breakwater is being extended toward the south which will enlarge the water area of the harbor to almost twice its present size. Large blocks of concrete weighing as much as eighty tons are sunk to form the foundation for this mole. The extension is rendered especially desirable on account of the heavy seas that make waiting outside the harbor dangerous in stormy weather. Increased protection to the shipping during adverse weather conditions is in fact an absolute necessity if the city is to continue its present commercial development.

One of the greatest handicaps of the port of Barcelona in the past has been the inadequacy of the coal supply. In spite of efforts by the Cortez to encourage the production of Spanish coal, no satisfactory development of this branch of the country's resources has occurred, and the chief dependence for sea vessels is now, as formerly, upon English mines. Up to 1902 the Spanish duties on imported coal were levied on all that came into the country irrespective of its destination. In that year, however, an English company, backed by the commercial interests of Barcelona, secured a special concession from the central government allowing them to construct a floating coal hulk in the outer harbor, all coals shipped to which were to be used in bunkering sea-going vessels and to be free from the customary duties. This has so reduced the cost of coal in the port that a decided increase has taken place in the number of ships bunkering here.

At present two floating coal docks are maintained capable of discharging coal at the rate of from 500 to 700 tons daily. On account of the extra charges for the higher speeds, however, the usual rate is from 300 to 400 tons per day of ten hours. The company has recently begun the installation of electric discharging machinery with a capacity of from 800 to 900 tons per day.

The depth of water at the usual discharging berth is twenty-three feet, although steamers of twenty-seven feet draft can be accommodated. The increased demand for coal due to these improved bunkering facilities, has raised the consumption of the port to over 700,000 tons per year of which 550,000 tons are from England. So successful has the project been indeed, that the same company is now negotiating for the extension of its privileges to the ports of Southern Spain, especially Valencia.

The control of the port and port charges rests in two authorities—one local and one central, though a single set of officers in most cases supplies both services. The central government, in pursuance of a comprehensive plan for the maintenance and improvement of all Spanish harbors, makes what is called a "transport tax" of 2.30 pesetas (about thirty-six cents)

per ton, and a local "port-works" tax of an equal amount is levied for and administered from Barcelona. Independence of action in the local authorities is, however, apparent rather than real, as all the plans for extensions or for special concessions are subject to review at Madrid.

On the whole, this control by the central authorities seems to have been exercised with intelligence and with a realization of the local needs. The commerce has steadily grown, and though the harbor is not yet equal to the demands of the industrial interests of the city, still it is a credit to the community it serves. The extent to which the port of Barcelona has entered into the commerce of the world, does not, of course, bear comparison with the thriving centers farther to the north, but when compared with the decadence of a generation ago the showing is satisfactory indeed.

There are at present the following services: Two steamers a month from Barcelona to New York regular lines going to Alexandria, Egypt and the Mediterranean ports, and sixteen Spanish shipping companies with regular sailings from Barcelona. Besides this the city is a port of call for five Italian, four French, three British, two Austrian, two German lines and one each of Belgian, Dutch and Norwegian nationality.

This is a showing unequaled by any other port of the Kingdom, and remarkable when the conditions of a generation ago are called to mind. The prosperity of Barcelona and the condition of its ports are tributes to the industry and genius of Catalonia, and the most reassuring signs of the development desired by "Young Spain" for the country as a whole.

ANTWERP, BELGIUM

By HENRY RALPH RINGE, Philadelphia

The port of Antwerp, located sixty miles from the mouth of the River Scheldt, is situated in the center of a rich and thickly populated manufacturing district, and is a most convenient exit for the greater part of the trade of Europe, since it takes the trade of Belgium, Northeastern France and part of Germany.

The trade is continually assuming larger proportions, an evidence of which is the fact that in 1902 Antwerp was the headquarters of sixty shipping companies. The growth in the amount of shipping entered at the port is shown by the following table:

Date.	No. of ships.	Tonnage
1880	4,626	3,117,754
1890	4,532	4,517,698
1899	5,420	6,842,163
1904	5,852	9,398,503
1905	6,034	9,846,707

Slightly more than one-half of the tonnage consists of imports, the principal articles being grains of all kinds, raw textile materials, mineral ores,

provisions and animal products. The exports, on the other hand, are manufactured articles, wrought metals, railway carriages, cement and glassware.

The River Scheldt, a winding river with banks of sand, has a tidal variation of between twelve and twenty-five feet at Antwerp. At the river front it is between three hundred and fifty and six hundred yards wide, and at extreme low water will admit vessels drawing twenty-five feet.

This tidal variation has made necessary a system of docks with an unchanging water level for the convenient loading and unloading of smaller vessels, and the width and depth along the river front has made possible its utilization for the construction of a fine system of quays for the use of the large ocean liners.

There are eleven docks which range in length from five hundred and seventy-four feet to two thousand six hundred and forty feet. All are connected with sluices. The sides of the docks are crowded with warehouses, and all are equipped with the modern loading and unloading facilities. The widest entrance to the docks is seventy-eight feet and the depth is twenty-one feet, thus the larger vessels cannot enter except for drydocking when light.

The system of quays is growing very rapidly and now exceeds three and one-half miles in length. The water at the quays is twenty-six feet deep at low tide, the mean rise of the tide being fourteen feet.

In 1902 the quays and docks could accommodate about two hundred and twenty vessels at one time, but even this proved insufficient to meet the growing requirements of the port, so an extension was decided upon which would accommodate twenty more vessels.

The facilities for unloading the vessels are very unusual. There are fifty miles of railway around the quays and docks, and the goods intended for immediate delivery can be transferred directly from the vessel to the railway trucks, or, if it is merchandise to be transhipped, the corporation wagons are in attendance to transport it immediately from one vessel to another. There are about two hundred hydraulic traveling cranes, which lift the goods directly from the ships into the sheds. These sheds extend all along the sides of the quay within twenty-five feet of the front. They are about one hundred and seventy-five feet wide and are divided by spaces just sufficient to allow the railway trucks to pass from the front to the rear of the shed. After the goods are landed the merchants are allowed four or five days in which to clear their goods from the sheds free of charge. After this time the authorities can place the goods where they choose at the expense of the merchant.

The municipality is the port authority at Antwerp, and all the management, with the exception of the private warehouses, is in its hands. The docks are solely the property of the city, but the quays along the river side are not absolutely the property of the city, since they were constructed some years ago with the funds partly provided for by the government and partly by the City of Antwerp. An arrangement exists between the town authorities and the government by which the municipality receives all dues and then pays the government a certain proportion.

The working of the port is controlled by the town council, who are advised by a committee, which includes the chief engineer of the town, the chief engineer of state railways, the inspector of customs and the president of the chamber of commerce. The government of Belgium also exercises an effective control because it acts as conservators of the river and aids in carrying out the extension of the quay walls and the river accommodations. The government gets no interest on its outlay, but is paid thirteen-fifteenths of the earnings of the quays until its capital outlay is repaid.

The port of Antwerp has exceedingly low charges for port dues. This is partly because of the fact that the imperial government has largely contributed to the cost of improvements and has foregone all imperial dues, and partly because the municipality has made it a point to keep the charges on shipping as low as possible. The port expenses of the shipowner are best considered under two heads: First, port dues, and second, port charges. The port dues per ton net register are about $10\frac{1}{2}$ cents per ton at the docks and about .06 3-10 cents at the quays. These charges are subject to a reduction on a vessel making repeated voyages in a year. The port charges are better understood by dividing them into two heads:

1. Charges in connection with the navigation of the vessel, namely, pilotage.

2. Charges in connection with the cargo, namely, loading and unloading.

These are different from the dock dues, since they are for direct personal services and have to be paid either directly to the individuals or indirectly through the authorities to whom the individuals are responsible. The pilotage at Antwerp is compulsory and is a little over $7\frac{1}{2}$ cents per ton net register; while the expenses for discharging the cargo, which consists in passing it from the vessel to the consignee or those receiving it in his behalf on the quay, depend upon the price of the labor of the dockers, which is about one dollar per day.

Many suggestions have been made for improving the harbor, but the most important so far offered is to divert the River Scheldt by making a cut across the bend in the river, known as the *Grande Coupure*, and to utilize one of the banks for new river berths. The people of the City of Antwerp are not eager for this change, but would rather have one long dock over practically the same route as the *Grande Coupure*, with locked entrances at both ends, and then from this main dock have several branch docks. All the land necessary for the scheme is to be purchased by the government and then additions gradually will be made.

Another very valuable suggestion has been made in regard to the sheds. The authorities are not satisfied with the open sheds and have proposed the scheme of having sliding doors. They also propose to have a double line of sheds three hundred and fifty feet wide, so that the front shed could be used for outgoing goods and the rear shed for incoming goods. This, together with a corresponding increase in the number of rails, will be a most valuable addition to the facilities for handling the cargoes, and when these suggestions are carried out, which in all probability will be soon, Antwerp will be able to welcome any great increase in trade with adequate facilities.

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DEPARTMENT OF SOCIAL WORK

THE PRESENT PUBLIC POOR RELIEF OF BERLIN—ITS ORGANIZATION AND ITS EFFECTIVENESS¹

The system of poor relief in most large German cities is partly modeled after the well-known Elberfeld system, which, although inaugurated in 1853, has since been measurably transformed by the recent rapid growth of cities and changing social and industrial conditions. Owing to differences in social order and political institutions, the Germans have developed a system of public poor relief which is a masterpiece of organization, compared with which American and English organized efforts are relatively unimportant. The last annual report on the administration of public poor relief shows that during the fiscal year, April 1, 1904, to March 31, 1905, 3,897 persons were directly engaged in the work, the figures varying slightly from year to year. The decrease in the number of persons directly active in this field of municipal service for 1905 is merely due to a change in the method of computation, and is apparent rather than real. Of the 3,897 persons in 1904-05, there were 3,142 male visitors of the poor (Pfleger), 37 female visitors, 367 ward chairmen (Armenkommissionsvorsteher), and 351 vice-chairmen. The total expenditure for the relief of the poor in 1904 was 23,105,665 marks, having gradually increased from 19,820,436 in 1901. Of the sum expended in 1904, two-thirds, or a total of 14,817,364 marks, was spent for administration; the remainder for the public care of the sick in various hospitals. Since the city organized these hospitals on a business basis a certain amount of income is insured, which, however, covers scarcely more than 25 per cent of the annual expenses. The city continually receives donations from private persons, even though the administration and disbursement are left with the city poor relief organization. Since the total income from these sources is less than 25 per cent, the city's poor tax, while comparatively lower than in other large cities, is a matter of general consideration. The sum thus raised in 1904 by Berlin amounted to 18,937,536 marks, a per capita average of 9.66 marks, against 9.69 marks for the year 1903. The absolute increase is presumably due to the removal of the wealthier classes to the suburbs, and to the increase of the poor.

As has been intimated, not all of the relief work in Berlin is done by public effort. Private enterprise is active everywhere in supplementing the work, but its financial features cannot be accurately stated. The statistical yearbook of Berlin for 1905 gives the following data relative to this phase of poor relief. The table represents a series of foundations which is administered by the city, but it is not complete, as certain sources of the income could not be capitalized. The table follows:

¹ Contributed by Albert A. Giesecke, instructor in Political Science, Cornell University Ithaca, N. Y.

	Marks.
(a) Servants' wage foundations	1,069,759
(b) Voluntary loan banks and foundations	2,007,264
(c) The municipal foundations	92,527
(d) Larger foundations turned over to the city	12,811,062
(e) Aid to philanthropic societies by the city	321,005
Total	16,301,617

In addition to the private foundations administered by the city, considerable sums were collected and administered by philanthropic institutions and societies, among which are the following: (a) Hospitals, educational and reform institutions and asylums; (b) the Berlin Society for Household Sanitation; (c) the Berlin Society for Vacation Colonies, and (d) miscellaneous. The amount thus spent cannot, of course, be given. The sum total of the work thus carried on by private initiative is a factor, however, whose force must not be underestimated in dealing with the problems of poor relief in Berlin.

The figures for the last month of the fiscal year 1904-05 (March, 1905) showed the following results: 33,713 persons averaging 16 marks each per month were receiving permanent support; 11,383 cases of partial support for children were carried at a cost of 7½ marks per child; 732 others were given regular support, and 6,065 persons received an average of 11 marks per capita as temporary aid; 2,044 were otherwise assisted. During the succeeding six months the monthly averages decreased somewhat, due to a falling off in the amount paid out for temporary aid—the result of the return of warmer weather and increase of work.

I. *Organization.*

Though modeled after the Elberfeld system, Berlin has adopted such portions as could be easily applied. Changes in the details of the organization are constantly taking place. Although adopted in 1853 in Elberfeld, Germany, the Elberfeld system represents a historical growth, and not a creation. Its immediate success caused its gradual adoption in other German cities—in the smaller cities first. The plan originally formulated in Elberfeld provided, according to the act of July 9, 1852, for a directorate of eight; while, for the purposes of administration, the city was divided into ten wards (Bezirke), each of which was further divided into fifteen *quartiers*. There were to be sixteen persons in each ward—a chairman and fifteen visitors. The latter, even from the very beginnings of this system, included persons of all callings and professions. The visitors received no salary, but in return gained certain social distinctions. The wards and *quartiers* gradually increased from twenty in 1879 to four hundred and thirty-four in 1889, and to over five hundred in 1903. Women were not allowed to serve as visitors under the original scheme, but have since been permitted to act in that capacity, since it was found to have brought good results in other cities.

When the system was first introduced in Elberfeld, it was claimed that if the aid came from the city all private initiative would be cut off. This has proven untrue, for many foundations and quite a few philanthropic societies have been organized, especially in the larger cities like Berlin. Financially the Elberfeld system has proven economical.

In Berlin the *Armendirektion* is a subordinate part of the city council. The *Armendirektion*, which is quite a large body of both paid and unpaid members, stands at the head of the public poor relief. Heretofore it was customary for the commissioners to have direct supervision of the work of the chairman in each ward, and of the visitors under his control. Recently, owing to the pressure of work, and especially to the need of neighboring wards knowing all matters of mutual interest, another link of administrative organization was placed in between the Commissioners of the Poor and the ward, known as the circles (*Kreise*). This attempt has resulted in an expected facilitation of control and of decentralization. At present there are many such circles (*Kreise*) in Berlin, each one being attended by ten to fifteen ward chairmen, who meet monthly and exchange views and discuss matters, such as excessive expenditures in relief, or cases in which some unusual action has been taken.

All German citizens, without distinction of sex, residing in Berlin, can be drawn into the public poor relief service, if their record is free from criminal charges. The term of office is three years and is entirely honorary, while their sphere of activity in general is in the ward in which they reside. The chairman is elected from the body of visitors in each ward. All of the work must really pass through his hands and he acts, furthermore, as agent or go-between for the Poor Commissioners. Stadtrat Muensterberg believes that an essential part of the Elberfeld system consists in this, that the members at the monthly ward conference determine whether support should be given, and the amount in each case; and that this is done on their own responsibility. The Poor Commissioners naturally reserve the right to alter such decisions.

While the introduction of the circle is, perhaps, an important deviation from the Elberfeld system, it has not been the most radical. In Elberfeld support for permanent cases of relief has never been allowed for a longer period than fourteen days, being renewed from time to time as deemed expedient. In Berlin support, if permanent, is given for one year. After aid has been allowed, the case is no longer closely followed; hence it has happened here that the person receiving such aid has died during the year and the money been collected by someone else, or such person has removed to another ward and received similar aid.

A further deviation from the Elberfeld system has been the introduction of women visitors, the last annual report (1904-05) showing thirty-seven thus employed. The ward members have, until very recently, shown much opposition to women as visitors, on the ground that this was no work for women, and that the women would not exercise good judgment. In this direction American methods have advanced considerably beyond the German.

As a final point of organization worthy of special note is the fact that in the Elberfeld system the town was divided into districts, and a visitor allotted to each. This gave a very uneven distribution of cases and necessitated constant partitioning. In Berlin, on the other hand, all new cases are directed to the ward chairman. He allots the investigation of these cases to the visitors in his ward according to such circumstances, as nearness to residence of the visitor, number of cases already in the hands of the visitor, and special aptitude of the latter for any particular case. The crux of the whole matter centers around the activity of the ward members, for it is they who carry on the work under an organization which is unequaled elsewhere for system.

II. *The Ward and Its Activity.*

The ward chairman must have a definite office hour daily, but this he can arrange to suit his convenience. The essential point is that the time is announced in such a way that those in need of help may know when and where to apply. It is, of course, expected that he will hear any urgent case outside of his office hours. The chairman naturally tries to secure as much data as possible from the person seeking relief, which he uses to check up the signed statement of this person after the visitor has investigated the case. Should a person ask for or require medical aid, the chairman must fill out a special blank, which serves as an official notification to the doctor to examine the patient. Upon the securing of sufficient details from the person seeking relief, the chairman is enabled to turn the matter of its investigation over to one of the ward visitors. One very noticeable characteristic of those seeking aid has been their neat appearance. This fact became increasingly evident in the visits to the rooms of those persons. True, in many cases the rooms lacked all but the most essential utensils and furniture, but there was an air of neatness and cleanliness which denoted some degree of thrift. Nor were the rooms specially prepared for the reception of the visitor, for he came unexpectedly, and sometimes did not find at home the persons whom he sought.

In accompanying the visitor, I became personally interested in two cases, and have included them in this article as concrete illustrations of the data upon which the visitors, at their monthly meeting, base their decision:

<i>Case "A."</i>	<i>Questions.</i>	<i>Case "B."</i>
Gustav P——	Name	Stephen D——.
Locksmith	Occupation	Day laborer.
Protestant	Religion	Catholic.
8/25/1869	Birth	12/18/1873.
Königsberg	Place of birth	Sempolvo.
Since 1871	Resident in Berlin	Since 1887.
No	Married	No.
2 (born out of wedlock)	Children	No.

<i>Case "A."</i>	<i>Questions.</i>	<i>Case "B."</i>
A mother, brother and two sisters on his side; a brother on her side.	Names of relatives of relief seeker and wife: (a) parents; (b) brothers and sisters...	A mother and sister on his side; two sisters on her side.
Yes	Own dwelling	Lives with sister.
12 marks per month....	Rent	10 marks per week for rent and food.
6 marks	Income from renting room.	
November, 10 marks. } December, 8 marks.. } January, 8 marks... }	Previous support	None.
No	Any sick-benefit fund?	No.
14 weeks' steady employment.	Last place of employment	4 weeks at last place.
	Wages	10 cents per hour.
Partially employed by playing harmonica.	When last employed and means.	Odd jobs.
Yes	Incapable of working?..	No.
No.	Any old age or pension fund.	No.
No.	Member of a burial fund	Yes.
Right arm paralyzed ...	How prevented from earn his living.	Sickness.

In both cases the relief seekers were examined by the doctor and reported as sick and incapable of doing a man's work. In case "A" the investigator learned from other sources that the man's story was true to the extent that he earned his money by playing. He proposed that the man be given a new pair of shoes, for which he had asked, and perhaps a couple of marks only per month, for he had heard damaging testimony against the relief seeker. At the monthly meeting this testimony was corroborated by other members present, and it was decided to grant him a pair of shoes, but no money.

In the second case the doctor stated that the man was practically incapable of doing any work, and at best might undertake light work at infrequent intervals. The visitor corroborated this statement and said the only work the man had undertaken was coal-carrying, and even this he could scarcely do. He, therefore, proposed that ten marks per month be allowed him. During the discussion several members favored an increase of this sum, but it was finally decided to allow him the amount mentioned. Here we see two cases for relief owing to inability to do steady work—one because he was incapable, the other because he was but partially incapacitated. Had it not been for certain damaging evidence, the latter would also have been granted a small monthly allowance. If his case, however, is one of dire necessity, the ward chairman may interfere at any time; therefore, this door always stands open.

The monthly ward meeting usually takes place toward the end of the month, the actual date being fixed in each ward. All decisions require a majority vote, although the minority has the right to formulate its objections in writing and send them to the Poor Commissioners. At the beginning of the meeting, messages from the Poor Commissioners are read, and any general questions considered which the chairman may like to bring up. After that follows the discussion of the individual cases, each visitor having usually three, four, or even more to present. An old case is, of course, more rapidly disposed of, and it is surprising to note how familiar each member is with the details of such cases. New cases, on the other hand, require more minute consideration, but, unless there is absolute certainty in the matter, the maximum of relief is never allowed, as later investigation is usually relied upon to establish new facts. Nor is permanent support allowed until after the fourth month, another means of insuring conservative and cautious treatment of each case. This is the more necessary, because permanent aid means a grant for an entire year.

Minutes are kept of the proceedings at each meeting. In addition, books are kept containing the list of persons receiving support, and, furthermore, there are two cash books. The monthly report, made up by the ward chairman and sent to the Poor Commissioners at the beginning of each month, is made up from the following sources: (a) The minutes of the preceding meeting, (b) summary of the new cases of support, (c) list of persons receiving current support, (d) one of the cash books (as the two cash books are arranged according to the odd and even months of the year, to provide adequate auditing facilities), (e) the blanks, personal books, medical certificates and other papers requiring the vote of the members of the ward for decision. All this requires time and effort on the part of the members, especially of the chairman. Not infrequently the monthly meeting lasts into the early hours of the morning, although the various cases are dispatched in a very business-like manner and the members kept to the work under consideration.

As for the financial matters, each ward chairman is allowed such a monthly sum as is considered to be sufficient. In the ward which I visited this sum amounted to 1,600 marks, and the chairman told me that he had already satisfied all demands and still had a comfortable balance left. Should the sum prove insufficient, the matter is laid before the Poor Commissioners for a thorough revision, and if it is found that the ward chairman has been extravagant, he can be held responsible.

The real problem for solution at these monthly ward meetings is the nature and amount of support to be granted, should the case be deemed worthy of support. It may here be added that support is comparatively infrequently refused. The elements entering into each case include first of all the personal characteristics, age, sex, family conditions, health, etc.; further, whether the support shall be permanent or only for one month; whether the entire burden of support shall be assumed by the city, or only enough allowed to supply any deficiency to permit the person to live; whether the person is worthy or unworthy of support. Accordingly, a dis-

• tinction must be made between money and other means of aid; between indoor and outdoor relief. Of course, if the person is sent to a home, hospital or other public institution, he need have no further cares, as the living expenses, medical assistance, etc., are all provided for him. But if the person supported remains in his home, the usual method of support is by means of money and, to some extent, of food. Permanent support in such cases takes the form of alms and money for the care of children. Alms are given to persons who are apparently in need and incapable of earning their daily bread. Support is given to the mother of children where the mother could not otherwise provide for their proper care. As a rule, a mother who is in good health and able to work, is considered capable of supporting one child. Whether she can support more than one child depends upon circumstances. Aid may be granted regularly for children under fifteen years of age; but after that period, weakness or sickness of child or mother must be taken into consideration. Should the mother neglect sending her child or children to school regularly, support may be withdrawn, or the Poor Commissioners may even remove the child from a non-ethical and baneful influence. It is very difficult to determine the amount of support which should be granted in such cases, and abuse is bound to creep in, no matter how well organized a system may be.

Naturally, in cases of permanent support, the visitor comes into more confidential relations with his cases, and can exercise a most beneficial influence over them by advising them in regard to the various perplexing problems which cross their daily path. On the other hand, the visitor gets an insight, by practical experience, into the actual social conditions existing among the poorer elements in his own part of the city.

During the first office hour after the monthly conference, the persons who asked for aid usually came to the ward chairman's office, to learn whether they were granted the aid for which they asked. When permanent aid has been granted, the chairman hands the person to whom it has been given a blank which must be signed. By virtue of his signature the person granted permanent relief gives up all rights to any inheritance which may fall to him. The money from this possible source of income is turned into the Poor Commissioner's coffer. There have actually been several cases on record where a person has been granted permanent aid, but when the moment for signing the blank arrived failed to do so, thereby causing the grant to be withheld.

III. *Effectiveness of the System in Berlin.*

The facts thus far brought out are by no means complete, but they at least offer an indication of the effectiveness of the system in force in Berlin. The essential principle of this system is the thorough treatment of each case of need, with the object not only of alleviating suffering and poverty, but also of devising some means by which those who are dependent may be restored, in whole or in part, to self-support. And this can be accomplished only by means of a numerous body of visitors, with frequent meetings to discuss and to decide upon measures that are of practical utility.

The real effectiveness of the system of public relief in Berlin hinges on two salient points: (a) Individuality, (b) decentralization. In England and America individualization is more or less difficult because of the difference in public poor relief administration. In Berlin all payments of money are made personally to seekers of relief, and not from a central office. The division of the city into wards, with enough visitors in each to provide adequately for every case, is the nucleus around which this individuality centers. This ideal has, however, not been fully reached here, for Dr. Muensterberg stated recently that the results have not been so satisfactory as in Hamburg, because there are only 4,000 visitors of the poor in Berlin—relatively many less than in Hamburg. He advocates an increase of visitors to a total of 8,000 to make the work effective.

There is, however, a further defect noticeable in the system. The larger the city, the less educated are the visitors for this kind of work, and the greater is the difficulty experienced in bringing the visitors into more or less direct and homogeneous working relations. In order to offset this difficulty the circle (*Kreise*) was placed between the ward and the Poor Commissioners.

Without the decentralization so apparent in this system, in which the ward chairman and the members of his ward determine in general every case after full discussion, there could be no satisfactory results. In theory the Poor Commissioners reserve the right to pass final judgment upon each case, but in practice very few are brought in detail to their notice.

Finally, it should be noted that the administrators of public relief in Berlin have recently attempted to increase the effectiveness of their organization by keeping in close contact with private philanthropy, and also by advancing those agencies engaged in checking misery and poverty, especially those ministering to public health.

This individuality and decentralization has resulted in the personal investigation of each case; in preventing the visitor from becoming overburdened with cases, and, secondarily, in permitting the visitor to exert at least some beneficial influence over the persons in his hands.

The office of visitor of the poor is indeed a matter of honor, but the danger that it may be misused for furthering private ends is not unknown in Germany. It is, however, infrequent in practice. On the other hand, the social usefulness of such a system can scarcely be estimated, for the visitors are persons of the middle, and even upper, classes. A practical insight into the needs of the poor is really a most excellent school in social economy. In short, those connected with the administration of poor relief in Berlin have come to the conclusion (by personal experience) that the most careful observance of the Elberfeld system has resulted in a decrease in the burden of furnishing poor relief, and at the same time has increased the possibility of an outdoor relief which could be productive of good results. And the statistics for the administration of poor relief in the various larger German cities bear out the evidence of this experience. The preponderating amount of outdoor relief which is to be found here, is the result of the large number of visitors who may be counted upon with absolute certainty to exercise their office effectively and faithfully.

BOOK DEPARTMENT

NOTES.

Addams, Jane. *Newer Ideals of Peace.* Pp. xviii, 243. Price, \$1.25. New York: The Macmillan Company, 1907.

This is the latest volume of the Citizen's Library of Economics, Politics and Sociology, edited by Prof. R. T. Ely, and to which Miss Addams has already contributed the volume, "Democracy and Social Ethics."

It is given to but few people to have the rare combination of power of insight and of interpretation possessed by Miss Addams. The present book shows the same fresh virile thought, and the happy expression which has characterized her work. She is looking at the development of American life to see what the real meaning thereof may be. She finds its center in the great industrial development, and it is by this same development that she would test our ideas and ideals. The discussion is divided into eight chapters. First the introduction, showing that newer ideas of peace are dynamic, and that they are driving out the older conceptions. Then follows a chapter on "Survivals of Militarism in City Government," showing that the lack of adjustment between present governmental methods and existing conditions results in a reversion to the military type, and that to some extent we have lost faith in democracy itself. In chapter three she discusses "Failure to Utilize Immigrants in City Government." This is continued in chapter four, "Militarism and Industrial Legislation." Chapter five is devoted to "Group Morality in the Labor Movement." Chapter six to the "Protection of Children for Industrial Efficiency." Chapter seven deals with the "Utilization of Women in City Government," and the final chapter with the "Passing of the War Virtues."

There is nothing of namby pamby sentimentalism in Miss Addams's idea of the peace movement. She is trying to show, and this she does with great success, that from the most despised groups of to-day in American life are coming some of the highest ideals, which will become the possession of the American people in future days, unless our development is checked. The volume is most inspiring, and deserves wide recognition.

Baker, J. H. *American Problems.* Pp. vii, 222. Price, \$1.20. New York: Longmans, Green & Co., 1907.
Reserved for later notice.

Bernhard, Ludwig. *Handbuch der Löhnungsmethoden.* Pp. 234. Price, 3.20m. Leipzig: Duncker und Humblot, 1906.

This German work is really an abridgment of the well-known volume by Schloss on "Methods of Industrial Remuneration," with certain pertinent

additions. The portion of the latter book relating to profit sharing is entirely eliminated and the study of wage systems is brought up to date.

The plan is that of a free translation of Schloss's work, with supplementary discussions and interpolations in those chapters most needing revision. The book opens with a valuable introduction by the author, in which the theory underlying different wage systems is discussed, the graphic method of illustration being used to add to the clearness of exposition. Among other new material is an essay on the piecework system, a labored summary of the principal wage systems, and a final chapter on the future methods of industrial remuneration. A few interesting charts showing the working of various wage systems are appended.

Methods of remuneration are well worth considerable study. They are problems vitally affecting both employer and employee. Every contribution to the subject should be applauded.

Blackman, W. F. *The Making of Hawaii*. Pp. xii, 266. Price, \$2.50. New York: Macmillan Company, 1906.

This is a reprint, with practically no changes, of a volume first issued in 1899. The author has attempted to give a sketch of the social evolution of Hawaii. The history divides into three periods: First, prior to the discovery of the islands by Captain Cook, in 1778; second, ending with the arrival of the American missionaries in 1820; third, the present time. He gives a general survey of the history of the Kanakas which is fairly satisfactory, although not in detail, and which is marred by his wandering from description into explanations of the views of various ethnologists. In the second period he is discussing the changes which come to the people as a result of the contact with the outside world, while in the latter period he naturally lays much emphasis upon the missionary activity. A brief synopsis of the political history leading to the absorption by the United States is presented. He believes the native Hawaiians are destined to disappear, and the problem of the future turns upon the ability of the white stock to work in the tropics. Here he wanders from Hawaii into discussions of the views of various students. In spite of many defects in balance of topics treated and in method of presentation, the volume is accurate and gives a very good comprehensive view of the development of the islands.

Bosanquet, Helen. *The Family*. Pp. 344. Price, \$2.75. London and New York: Macmillan Company, 1906.
Reserved for later notice.

Bosc, H. *Les Droits Législatifs du Président des Etats Unis d'Amérique* (Thèse pour le Doctorate.) Université d'Aix-Marseille. Pp. viii, 287. Paris: A. Rousseau, 1906.

Butterfield, Virginia M. *Parental Rights and Economic Wrongs*. Pp. 92. Price, 50 cents. Chicago: Stockham Publishing Company, 1906.

Clement, E. W. *A Handbook of Modern Japan*. Sixth edition. Pp. x, 423. Chicago: A. C. McClurg & Co.

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The real worth and success of Mr. Clement's "Handbook of Modern Japan" is most clearly attested by the demand for this sixth edition in two years' time from the first appearance of the book.

This latest edition differs from the previously published only in the addition of a chapter on the Russo-Japanese war, and in bringing the statistical data up to date. The new chapter covers but twenty-four pages, it is true, yet in that space the author has clearly set forth the causes and events leading up to the war, the progress of hostilities and critical movements, and, finally, the results of the war, not the least of which is the new vision it has given the world of what Japan is and what it may be in the future.

Since the outbreak of the war between Russia and Japan the latter country has been the subject of a vast amount of literature. But in all the host of books none can be more highly recommended for general use than this "Handbook" by Clement. In its three years before the reading world it has become well known to many persons interested in Eastern conditions. For those not already familiar with its pages there is waiting a great store of interesting information concerning the economic, social and political life in Japan. Not the least valuable and interesting are the varied statistical tables contained in the elaborate appendix. It is an unpretentious book of very high character—well printed and well illustrated.

Cords, Th. M. *Die Bedeutung der Binnenschifffahrt für die Deutsche Seeschifffahrt.* Pp. viii, 429. Price, 9.20m. Berlin: J. G. Cotta.

The subtitle of this painstaking monograph states that it is a study of German maritime commerce in its dependence upon internal navigation during the period 1890-1903. This book furnishes a commercial picture showing routes, organization, policy and trade. It is one of the kind of studies which appears but rarely outside of Germany and makes the student wish that we had such a book upon America.

Crozler, J. B. *The Wheel of Wealth.* Pp. xix, 526. Price, \$4.50. New York: Longmans, Green & Co., 1906.

Reserved for later notice.

Edwards, W. S. *Into the Yukon.* Pp. xii, 324. Price, \$1.50. Cincinnati: Robert Clarke Company.

This book is a brief and well illustrated narrative of daily journeyings during a two months' vacation trip. It is written in the form of letters and covers a lengthy trail, reaching from Cleveland, Ohio, via the Canadian route, to Seattle, Skagway and Dawson, and back to St. Louis, via San Francisco, Los Angeles and Denver.

The book has reached its second edition because it is written by a good observer, who tells us many interesting facts descriptive of economic and social conditions and prospects. While the title pertains to the Yukon, at least half of the book deals with the southern part of the route. One tendency of the book is to clear away some of the glamour of the west and help explain why, after all, the western third of the United States has less people than some single Eastern States.

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Edwards, W. S. *Through Scandinavia to Moscow.* Pp. 237. Price, \$1.50. Cincinnati: Robert Clarke Company, 1906.

This book represents the letters written by the author to his father during a journey through the regions named in the title. These letters are now assembled in a volume by themselves. The personal touches and impressions—interesting incidents well told—make an unusually attractive account of a traveler's experiences. But the book adds relatively little to the general information concerning the regions described. The author does not lay claim to having discovered new conditions, and it is well.

Here and there an occasional careless statement threatens to shatter the reader's faith in the accuracy of the book as a whole. To speak of New York as having "wealth of coal and iron, with immense primeval forests," by way of comparison with Denmark, is more ridiculous than effective. Denmark, credited with only "sixteen hundred thousand" people by Mr. Edwards, claimed to have over two million by the census of 1900. Fortunately, however, such errors are few in number, the author having confined himself largely to records of observation and impressions received.

The book is profusely illustrated with pictures taken by the author. But unfortunately they are not of a high class of workmanship. Many views of real value have been spoiled.

But on the whole the book is worth reading. Its story is pleasantly told, with many interesting items well worth remembering.

Ehrenburg, H. *Die Eisenhüttentechnik und der Deutsche Hüttenarbeiter.* Pp. 204. Price, 4.50m. Berlin: J. G. Cotta, 1906.

Fanning, Clara E. *Selected Articles on the Enlargement of the United States Navy.* Pp. 134. Price, \$1.00. Minneapolis: H. W. Wilson Company, 1906.

In this volume of one hundred and thirty-four pages are collected fifteen articles and addresses dealing with the United States navy. All have been printed before, most of them in our leading magazines. The object of the book is to present material on both sides of the question: "*Resolved*, That the policy of substantially enlarging the American navy is preferable to the policy of maintaining it at its present strength and efficiency." The book is designed for the use of high school debating societies.

Ferri, E. *The Positive School of Criminology.* Pp. 125. Price, 50 cents. Chicago: Charles H. Kerr & Co., 1906.
Reserved for later notice.

Fleming, W. L. *Documentary History of Reconstruction.* Vol. I. Pp. xviii, 493. Price, \$5.00. Cleveland: A. H. Clarke Company, 1906.

For many years the author, professor of history in West Virginia University, has been gathering data on the question of reconstruction. Meantime, his many articles and his book on the history of the "Civil War and Reconstruction in Alabama," reviewed in *THE ANNALS* in March, 1906, have made him authority on the subject. The number of documents collected was so great

that to reproduce them in their entirety was evidently impossible. The author was, therefore, compelled to digest them and give merely important excerpts. In so far as possible he avoids the expression of any personal position and tried to give by quotations the actual views of all the parties to the various controversies.

It is obvious, therefore, that little can be said in the way of criticism upon the text of the book. If the author failed in any way to fairly represent divergent positions, or intentionally suppressed important documents, he would have laid himself open to deserved censure. It is a pleasure, therefore, to state that, so far as the reviewer can discover, Dr. Fleming has been extremely impartial in his dealing with the facts, that he has been singularly successful in selecting important quotations, so that the fundamental positions of the different men involved are accurately set forth. Too much credit cannot be given Professor Fleming for his untiring search for documents. We can only regret that it is necessary to exclude so much of their contents from the volume itself.

The present volume contains six chapters: (1) The South After the War, Economic and Social Conditions; (2) Plans, Theories and Problems of Reconstruction; (3) Restoration by the President; (4) Race and Labor Problems: "Black Codes"; (5) The Freedmen's Bureau and the Freedmen's Bank; (6) Reconstruction by Congress. There are likewise five illustrations which add to the interest of the book. Those who have occasion to deal with the problems growing out of the Civil War, or who wish to better understand the difficulties involved in the readjustment, will be very grateful to Mr. Fleming for reproducing so much contemporaneous testimony. If the second volume is up to the standard of the first, they will prove reference books of very great value.

Fehr, F., und Lotz, T. *Statistische Mitteilungen des Kantons Basel-Stadt*. Pp. 62. Basel: J. Frehner.

Forbes-Lindsay, C. H. *America's Insular Possessions*. Two Vols. Pp. 1126. Price, \$10.00. Philadelphia: J. C. Winston Company, 1906.
Reserved for later notice.

Graham, J., and Oliver, G. R. S. *Spanish Commercial Practice*. Parts I and II. Price, \$1.25. London and New York: Macmillan & Co.

These two volumes represent a class of commercial publications of which we stand in need. They are written for use in the schools of England by the Secretary for Higher Education of the City of Leeds. The object is to cover the whole field of Spanish commercial practice by a series of inductive lessons illustrating the language, forms and commercial customs in use in the countries where Spanish is the language of commerce. The treatment is such that the books will be of value to the exporter dealing with Spanish countries as well as to the student, since ready reference can be had to any of the forms in regular use in carrying on the business communications. Throughout the advanced book, moreover, there are inserted numerous notes giving hints and suggestions as to the best channels by which to obtain

reliable information in regard to prospective clients, how to save money by an alternative method of drafting a document, how best to forward goods, the procedure that must be complied with in recovering moneys and a host of other details which the average business man has no opportunity to learn except by expensive experience.

The books should prove especially valuable both to classes in commercial Spanish and to those actively engaged in foreign trade.

Hendrick, F. *The Power to Regulate Corporations and Commerce.* Pp. lxxii, 516. Price, \$4.00. New York: G. P. Putnam's Sons, 1906.
Reserved for later notice.

Hershey, A. S. *The International Law and Diplomacy of the Russo-Japanese War.* Pp. xii, 394. Price, \$3.00. New York: Macmillan Company, 1906.
Reserved for later notice.

Hill, D. J. *A History of Diplomacy in the International Development of Europe.* Vol. II. Pp. xxv, 663. Price, \$5.00. New York: Longmans, Green & Co., 1906.
See "Book Reviews."

Holdich, T. H. *Tibet, the Mysterious.* Pp. xii, 356. Price, \$3.00. New York: F. A. Stokes Company, 1906.
Reserved for later notice.

Homans, J. E. *Self-Propelled Vehicles.* Pp. 598. Price, \$2.00. New York: Theodore Audel & Co., 1907.
Reserved for later notice.

De Hostos, E. M. *Moral Social.* Pp. 262. Price, 5p. Madrid: Bailly-Bailliere é Hijos, 1906.

This small volume of 262 pages, now in its second edition, summarizes in a clear and interesting manner the chief theories concerning the evolution of society. The book is divided into two parts, the first treating of the duties of the individual as a member of society and what are the forces in society impelling to advance. The latter portion treats of the relations between morality and the various forms of social organization.

Jenny, Oskar Hugo. *Das Englische Hülfskassenwesen in neuester Zeit.* Pp. 77. Berne: Stämpfli & Co.

This monograph is an investigation of the English Friendly Societies, including the various aspects of their work. The legislation on this subject is briefly reviewed; its more salient features are portrayed, and the growth of the societies since 1875 is given special attention. The statistics in respect to their number, membership, capital and expenditure are carefully presented and discussed, and the relative importance of the various forms of insurance is designated.

The conclusions of the author are embodied in a very complete summary, and a number of valuable tables are conveniently appended.

Johnson, W. F. *Four Centuries of the Panama Canal*. Pp. ix, 461. Price, \$3.00. New York: Henry Holt & Co., 1906.

See "Book Reviews."

Jourdan, P. *Etude Juridique sur Les Trusts*. (Thèse pour le doctorat, Université d'Aix-Marseille.) Pp. 210. Paris: Arthur Rousseau, 1906.

Joyce, P. W. *A Smaller Social History of Ancient Ireland*. Pp. xii, 574. Price, \$1.25. New York: Longmans, Green & Co., 1906.

See "Book Reviews."

Julhiet, E. *Les Tribunaux spéciaux, pour enfants, aux Etats-Unis; en France par Henri Rollet; en Angleterre par Marcel Hleine; en Allemagne par Maurice Gastambide*. Preface de M. Bérenger membre de l'institut. Paris: Administration de la Revue l'Enfant, 13, rue de l'Ancienne-Comedie, 1906.

"Children's Courts Abroad." One excellent result of organized charity and organized penology is the rapidity with which attention can be focussed upon some new social endeavor. Still more, it furnishes conductors by which the new impulse can be rapidly communicated. When the first juvenile court was established in Chicago, in 1899, it soon attracted the attention of the whole country. Judge Murphy, of Buffalo, was prompt to follow, and Judge Lindsey, of Colorado, soon showed the personal accent and character which might be given by the judge. None of this work was done in isolation. Independent European observers soon began to study the question, and some of them crossed the ocean for the purpose. The report published by the government for the International Prison Commission was widely distributed in Europe, and the results of the independent investigation referred to have been freely printed abroad.

The little volume published in French by La Revue de l'Enfant is made up of four papers. M. Edouard Julhiet gives an account of the origin and history of children's courts of the United States. A long residence in this country and a thorough understanding of institutions has well fitted M. Julhiet for his task. He has presented effectively the salient points and essential principles of the juvenile court system, while noting variations and method in different states. M. Julhiet defines in a single phrase the American system as "a fruitful co-operation in which the court, far from usurping the function of the family, obliges the family to fulfil its natural duties."

As the result of a lecture of M. Julhiet before the Musée Social, an impulse was given to the application of the system in France. It was recognized that the American judge has a greater power than the French judge in being able to return a child to its family while at the same time putting him under a probation officer, who can summon him again before the judge if his conduct require it. Without waiting for new legislation, steps were taken, through the active interest of M. H. Rollet, to secure an application of the probation system for children by a somewhat elastic application of existing laws. It is impossible to say yet what the result of this experiment

will be, but M. Rollet is hopeful, and the indications are that France will before long establish the children's court as a part of its legal system.

The third paper, by Marcel Kleine, gives an account of juvenile courts in England, with special reference to Birmingham. M. Maurice Gastambide writes of the progress made in the recent German civil code in providing for a form of guardianship exercised by courts of the first instance. In Berlin and Munich there are courts exclusively occupied with cases of children.

The volume is illustrated with pictures of the Denver juvenile court. The leader of the suspended sentence law in France, Senator Béranger, writes a sympathetic preface.

Lucas, C. P. *The Canadian War of 1812.* Pp. 270. Price, \$3.00. New York: Oxford Press, 1906.
See "Book Reviews."

Mackaye, J. *The Politics of Utility.* Pp. xiii, 179. Boston: Little, Brown & Co., 1906.

Manhattan (How) is Governed. Pp. 117. Price, 25 cents. New York: Citizen's Union, 1906.

Marcaggi, A. *Les Messages Présidentiels en France et aux Etats Unis.* (Thèse pour le Doctorat, Université d'Aix-Marseille.) Pp. xii, 183. Paris: L. Larose & L. Tenin, 1906.

McPherson, L. G. *The Working of the Railroads.* Pp. viii, 273. Price, \$1.50 net. New York: Henry Holt & Co., 1907.

The separate chapters of "The Working of the Railroads" consist of a course of lectures delivered by Mr. McPherson at Johns Hopkins University, but the material which they contain was derived while the author was in the departments of traffic, finance, accounts and general management of several leading railroads. The title of the book is not wholly appropriate, as the author does not so much analyze the technical work of the individual railroad departments as the general principles which they pursue in their work. In describing these general principles, however, the author presents some of the information which he attained while in the railway service.

The separate chapters deal with construction and operation, traffic, accounting and statistics, financial and executive administration, correlation and integration of the railroads and with their relations to the public and the state. In the discussion of these subjects no original doctrines are advanced; neither is the technical working of the railroads fully analyzed. But the general and elementary principles of railroad transportation are explained in an interesting way, and, in their explanation, information of interest both to the voter and the student is presented.

Meakin, Annette M. B. *Russia: Travels and Studies.* Pp. xx, 450. Price, \$4.00. Philadelphia: J. B. Lippincott Company, 1906.
Reserved for later notice.

Muhl, F. V. *De l'Appuleio Saturnino Tribuno Plebis*. Pp. 106. Basel: Werner-Riehm, 1906.

Munsterberg, G. *Amerikanisches Armenwesen*. Pp. 120. Price, 2.40m. Leipzig: Duncker und Humblot, 1906.

Murray, D. *Japan*. Pp. 567. Price, \$1.50. New York: G. P. Putnam's Sons, 1906. A revised and enlarged edition of Murray's "Japan," which appeared first in 1894.

In the original edition the author's aim was to give a full history of the development of modern Japan—or from the beginning of the nation to the establishment of constitutional government, in 1890. The value of the book, in its original intent, is well recognized, while Murray's close relationship with Japanese institutions—serving as superintendent of education in the empire from 1873 to 1879—made possible an appreciative interpretation of Japanese conditions.

The present revision has been done by Mr. Albert Whitehorse, with two chapters by no less distinguished an author than Baron Kentaro Kaneko. The revision consists mainly in addition rather than in actual alteration. The original historical development allows the main body of the book to remain unchanged from the first edition. The later chapters, however, treat of the history of Japan from about 1890 to 1906, with the most stress laid on the war with Russia and the resources of Japan as set forth by Baron Kaneko.

In these latter respects the book differs but little from many of the other numerous books published since the outbreak of the Russo-Japanese war. The real claim of the book depends not on the revised features so much as on the whole view it gives of Japanese history from the beginning of the empire down to the present time.

Ober, F. A. *Ferdinand De Soto and the Invasion of Florida*. Pp. 285. Price, \$1.00. New York and London: Harper Brothers, 1906.

Romance plays little part in the histories of to-day. Cause and effect, economic facts and the prosaic side of history receive more emphasis. But romance and personalities should have their place, and in the lives of explorers economic facts fail to destroy a sense of adventure. In this little volume Mr. Ober has given us a splendid story of the personality and of the days of wonder and adventure of De Soto. Spanish-American history is not new to the author, for he has already given to the public the lives of Columbus, Cortes, Pizarro and Balboa. The story is based upon splendid authority, and the author has shown a close adherence to the facts. Among those who joined De Soto's expedition to Florida were several Portuguese from Elvas, and to one of these we owe the best account of the wanderings. "The True Relation of the Fidalgoas of Elvas" is probably the best of three contemporary narratives. The other two are the "Conquest of Florida," written by Biedma, the king's factor on the expedition, and a journal kept by Rodrigo Rangel, De Soto's secretary. The author points out that the narratives of the Fidalgo and Rangel, written and published separately, are

corroborative and agree generally with an account gathered from the soldiers forty years after by Garcilaso in his "La Florida del Inca." The author has also availed himself of the researches of such Spanish scholars as Irving and B. Smith. These works form the basis of this volume.

The story of the early life of De Soto in Spain, his service under the crafty and cruel Pedrarias in the wilds of Panama and Nicaragua, the part he played in Peru and his relation to Pizarro, are told in a fascinating manner in the first five chapters. Spurred on by the remarkable accounts about Florida from the lips of Cabeza de Vaca, a survivor of the Narvaez expedition to Florida, he seeks new conquests and spoils, and is made Adelantado of Florida. Then follows a most interesting account of the remarkable exploring expedition through the southeast in search of gold. The author has given us a splendid insight into the dealings of De Soto with the caciques or chiefs of the tribes through whose territory he passed on his wanderings to the Mississippi; neither has he left out of account some description of the manners and mode of life of the natives and of the country. Many quotations are given from the chronicle of the Fidalgo and others who were eye-witnesses. There is also a good map, tracing the route traversed to the Mississippi and thence to Mexico. On page 248 the author points out that "De Soto was not the discoverer of the Mississippi, nor the first European to look upon it," and cites that the mouth had been entered in 1520 by Alonzo Alvarez de Poinda, commander of an expedition sent out by De Garay, governor of Jamaica, and that Narvaez must have entered or crossed its mouth about 1528. This little volume is neither dry nor dull, and in its pages is recreated a good story of the adventures, dangers and thirst for gold of De Soto and his sturdy band.

Oualid, W. *Le Libéralisme Economique en Angleterre.* (Thèse pour le Doctorat, Université d'Aix Marseille.) Pp. 331. Paris: Bonvalet-Jouve, 1906.

Pearson, H. C. *What I Saw in the Tropics.* Pp. 288. Price, \$3.00. New York: India Rubber Publishing Company, 1906.

Man is having a renaissance in plant conquest. We are adding new species to the cultivated list at a rate never before equaled. India rubber is one of the last, and the question of whether it is or is not at present on the list is answered in the affirmative by Mr. Henry C. Pearson, editor of the *India Rubber World*, of New York City. Mr. Pearson says that is what his book is about, but, as the author is not an academic man, but a man of affairs, and a journalist with lively interests, he has told us about many other things that he saw in a journey to Central America, the West Indies, Hawaii, Ceylon and the Malay Peninsula. The illustrations are profuse and interesting.

As an authoritative book on the present status of rubber cultivation it should be welcomed by the investor, the industrial prophet, and the students of economic geography and concrete economics.

Pond, O. L. *Municipal Control of Public Utilities.* Pp. 115. Price, \$1.00. New York: Columbia University Press, 1906.

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Robbins, H. (Ed.) *Labor, Capital and the Public*. Pp. 220. Price, \$1.00. Chicago: Public Policy Company.

This book treats of labor problems and their relations to employers and to the public. It is a compilation of articles and editorials exhibiting many phases of the question. Most of the latter are taken from *Public Policy*, *Wall Street Journal* and the *Boston Transcript*, and bear the characteristic stamp of those journals. The attitude of the book is a conservative one, with progressive tendencies. The editorials have the popular flavor and address themselves more readily to the casual reader than to the scientific student of labor questions. Several of the selected articles are, however, important expositions of particular features of the subject, and give the book an added value.

Rosenqvist, O. A. *Die Konsumgenossenschaft, ihr Föderativer Ausbau und Dessen Theorie*. Pp. 86. Basel: E. Birkhäuser, 1906.

Roth, C. *Die Auflösung der Tiersteinischen Herrschaft*. Pp. 178. Basel: Gasser & Co., 1906.

Ruegg, A. *Beiträge Erforschung der Quellenverhältnisse in der Alexander-geschichte des Curtius.* Pp. 119. Basel: E. Birkhäuser, 1906.

Sears, J. H. *The Physical Geography, Geology, Mineralogy and Paleontology of Essex County, Massachusetts*. Pp. 411. Salem, Mass.: Essex Institute.

This work represents the results of many years of careful study in one of the most complex geological areas in New England. Mr. Sears has succeeded admirably in his interpretation of Essex County geology, and has given the public one of the most thorough of all American regional studies. The book is especially valuable and interesting to any one at all familiar with Eastern Massachusetts localities, and may well stand as a model for workers in other fields.

A large number of unusually excellent plates and maps add much to the scientific value of the volume and maintain the high standard of work for which the Essex Institute has long been noted.

Shambaugh, B. E. *A Report on the Public Archives of Iowa*. Pp. 39. Des Moines: Historical Department of Iowa, 1906.

Smythe, W. E. *The Conquest of Arid America*. Second edition. Pp. xxv, 360. New York: Macmillan Company.

In this new and revised edition of "The Conquest of Arid America" the author has added the progress of the irrigation movement since the appearance of his first edition in 1900. The advance of irrigation in the last five years has been the most important part of its entire progress, for these years mark the beginning of the national activity in reclaiming large portions of the arid regions.

Mr. Smythe has occupied one of the foremost places in the irrigation movement during the last decade and a half. He is, therefore, especially well fitted

to write this history of what has been accomplished in making arid America habitable, and to forecast what the future may have in store by supplying water to the desert.

No one who is interested in current events can read Mr. Smythe's book without feeling the vastness of this conquest of the desert—what it means to the future of the United States. As the author expresses it, "the ninety-seventh meridian divides the United States almost exactly into halves. East of that line dwell seventy-five million people. . . . West of that line dwell five or six millions—less than the population of Pennsylvania. . . . And yet the vast territory to the west . . . is distinctly the better half of the United States." This comparison cannot help but seem startling to the easterner, who has always leaned toward the opinion that "Land that won't grow trees, won't grow anything."

But to the careful reader this book brings many startling revelations of the vast possibilities in the almost unknown West. The author is thoroughly imbued with the enthusiasm of the ardent westerner—eloquent in his support of western possibilities. Yet only occasionally does he seem to have been led astray by his enthusiasm. On the whole, his position seems to be fair-minded and conservative. He does not claim that irrigation alone means an earthly paradise. He constantly emphasises the fact that success in irrigation needs brains, energy, and, in the majority of cases, capital. His main claim is that with honest endeavor irrigation in the arid country will give far better profits per acre than will the most careful cultivation in the humid states.

The book is marred here and there by inferior typography. But it is valuable, interesting, entertaining—a clear, impartial presentation of all the aspects of the greatest achievement in present times, the conquest of arid America.

Steiner, G. *Napoleon I.* Pp. 47. Basel: Berichthaus, 1906.

Taft, W. H. *Four Aspects of Civic Duty.* Pp. III. Price, \$1.00. New York: Charles H. Scribner's Sons, 1906.

This is the fourth in the series of volumes that have been published as the "Yale Lectures on the Responsibilities of Citizenship." Mr. Taft approaches the subject of civic duty to interpret what should be the attitude of the average citizen, under different circumstances, toward the national government. He considers various phases of the duties of citizenship from four different positions: (1) From the standpoint of a recent graduate of a university; (2) from the standpoint of a judge on the bench; (3) from the standpoint of colonial administration, and (4) from the standpoint of the national executive. He holds it the first duty of all citizens to take an active interest in the community life—both the community of his daily associations and the larger community called the nation. The duty of actively partaking in the communal activities falls specially upon college trained men, who, since they have had special advantages, should assume special responsibilities.

Everyone should, by taking an active interest in the right government of

his own community, contribute what he can toward the cultivation of a law-abiding spirit—an attitude of mind on the part of the people at large which will prevent their ever being tempted to "take the law into their own hands."

The attitude of every citizen toward our colonial possessions should be such as to influence the government in pursuing there a policy at once firm and benevolent—always governed by the spirit shown in the phrase, "The Philippines for the Filipinos."

The last chapter is at once a criticism and an appreciation of our national government. The volume closes with the significant sentence: "When one looks into the system of government at Washington, and regards it from the standpoint of an impartial, tolerant citizen and critic . . . he cannot but reach the conclusion that we are a fortunate people who have progressed far in the development of an efficient public service and in vindicating the theory of popular government."

Taylor, H. C. *Agricultural Economics.* (An Introduction to the Study of.)

Pp. viii, 327. Price, \$1.25. New York: The Macmillan Company.

Dr. Taylor has had the opportunity to familiarize himself with both agriculture and economics. His youth on a farm gave that invaluable and almost irreplaceable familiarity that comes with experience. Then came a good agricultural college, work in the Department of Agriculture at Washington, study in Germany, and back to the west.

He says that the economics of agriculture "treats of the principles which should guide those engaged in that industry in the expenditure of energy in the production of economic goods, and also of those institutions which are necessary to impel the promoters of that industry to do that which best conserves the interest of society as a whole." The book also sets out to analyze the conditions of agricultural production so that the legislative adjustments of agriculture may be intelligently made.

The book was doubtless written for economic classes in an agricultural college. Its fitness for that purpose can best be attested by men in that work. It will certainly familiarize the young man with many a problem that must be mastered by the broadly successful farmer.

Thorpe, F. N., and Milligan, H. W. *Civil Government of the United States and Illinois.* Revised edition. Pp. 355. New York and Philadelphia:

Hinds, Noble and Eldredge, 1906.

This is a revised edition of a text book on civil government of the United States by Mr. Thorpe, and of Illinois by Mr. Milligan. The object primarily of such a book is no doubt, use in the schools of the State of Illinois. The civil government of the United States is divided into four parts, one each on the "Foundations of Government," "Local Government," "The Nation" and "State Papers." The state papers division contains such as the Mayflower Compact, First Declaration of Rights, Declaration of Independence, Articles of Confederation and the Constitution. The appendix contains various tables, an account of the Australian ballot system, problems on civil government and questions for debate. The civil government of Illinois

contains sketches of the history of Illinois, civil government of Illinois and renominations and election; also the constitution of the state printed in full.

Less attention than is usual in such treatises is paid to the study of laws and of the frame of government and more attention to the relation of the people to the government and the principles underlying civil life. The part the people play in the government is given emphasis, as, for instance, in the chapters on the people and the land, the people and the money, and the people in politics.

Turot, H., and Ballamy, H. *Le Surpeuplement et les Habitations à bon Marché*. Pp. 260. Price, 6 fr. Paris: F. Alcan, 1906.

Reserved for later notice.

Trzciński, J. *Russisch-Polnische und Galizische Wanderarbeiter im Grossherzogtum Posen*. Pp. 145. Price, 3.20m. Berlin: J. G. Cotta, 1906.

Van Tyne, C. H., and Leland, W. G. *Guide to the Archives of the Government of the United States in Washington*. Pp. xiii, 215. Washington: Carnegie Institution.

Wagstaff, H. McG. *State Rights and Political Parties in North Carolina, 1776-1861*. Pp. 155. Price, 50 cents. Baltimore: Johns Hopkins University Studies, 1906.

Webb, Sidney, and Beatrice. *English Local Government from the Revolution to the Municipal Corporations Act*. Pp. xxv, 664. Price, \$4.00. New York: Longmans, Green & Co., 1906.

Reserved for later notice.

Willcox, W. F. *Death Rate of the United States in 1900*. Pp. 59. Price, 75 cents. Boston: American Statistical Association, 1906.

Reserved for later notice.

Woodburn, J. A. *Political Parties and Party Problems in the United States*. Pp. vi, 314. Price, \$2.00. New York: G. P. Putnam's Sons, 1906.

Reserved for later notice.

Woodruff, C. R. (Ed. by.) *Proceedings of the Twelfth Annual Meeting of the National Municipal League*. Pp. 502.

Reserved for later notice.

Zartman, L. W. *The Investments of Life Insurance Companies*. Pp. v, 259. Price, \$1.25. New York: Henry Holt & Co., 1906.

Reserved for later notice.

REVIEWS.

Alec-Tweedie, Mrs. *The Maker of Modern Mexico.* Pp. xxi, 421. Price, \$5.00. New York: John Lane Company, 1906.

When a biographer is a personal friend of the man of whom he writes his work is at the same time aided and handicapped. The personality of the individual can, in some ways, be better interpreted, but at the same time friendship must, consciously or unconsciously, gloss over acts and characteristics which the true historian cannot overlook. This virtue and this fault are both present in Mrs. Alec-Tweedie's book on the great Mexican Dictator, President Porfirio Diaz. The humble childhood, romantic youth and powerful manhood of the general turned statesman are entertainingly and sympathetically presented, but the less pleasant features, the factional struggles, jealousies and intrigues, arbitrary government and iron-handed management of elections, go unmentioned or are noticed only to be condoned. As a biography, therefore, this volume is incomplete, but as an interpretation of the best phases of the character which has raised Mexico to a respected place among American republics it is to be highly commended.

Few men, indeed, have ever made their own lives so great a part of their country's history as has Porfirio Diaz. A description of his life involves references to almost every important figure which in the last seventy years has risen to defend or threaten the existence of the republic, Velasco, Morelos, Hidalgo, O'Hara, Bazaine, Miramón, Santa Anna, Juárez, Lerdo, Louis Napoleon, Maximilian, and many others. All are connected with the life of the man who first as general and then as president for over a quarter of a century has molded the Mexican state.

Not less interesting than the discussion of affairs intimately connected with the president himself are the author's descriptions of the conditions of present-day life in the republic. To many of her readers these chapters will appear to be the most valuable portion of the book. The treatment is not scholastic, nor is it intended to be so, but the incidents are drawn from the experiences of several extended visits to the country, and successfully portray the strong contrasts in Mexican society. Keen observation and an ability to see the people through impartial and yet appreciative eyes give us an excellent insight into various phases of the spirit of Mexican private and public life. The culture of the aristocracy, or perhaps, more exactly, of the oligarchy, is brought into strong relief against the poverty and ignorance of the great mass of the Mexican population. The passing of old and the coming of the new industrial Mexico is also well brought out. In fact, these discussions of the general conditions of the people and their government form so large a part of the book that it is quite as informing concerning the country as a whole as concerning its president.

The style is clear and entertaining, and, though the numerous byways through which the author leads us destroy the logical arrangement and proportion of the book, still she tells us much that is welcome concerning Mexico which it would have been necessary to omit had she confined herself more strictly to her subject. The text is illuminated with over a hundred

beautiful illustrations of persons and places prominent in the history of the country.

CHESTER LLOYD JONES.

University of Pennsylvania.

Collins, J. Byard. *The New Agriculture*. Pp. 374 Price, \$2.00. New York: Munn & Co., 1906.

"Back to the land and be an individual" is the burden of Mr. Collins's message. He states that "there are probably not less than two millions of people in this country at the present time who, by leaving their places which they now occupy as clerks, bookkeepers, salesmen and factory hands could, by earnestly and intelligently adopting the avocation of agriculture, better both their own condition and that of those dependent upon them."

This call to the land appears to be a city call of "go to it" rather than a country call to "come to it." It is much to be doubted if the writer at the present or at any time in the past has had regular engagements to milk the cows at 4.30 a. m., or even to go spray his trees in bug time. The urban tincture of the book is emphasized by the expression of sympathy with the viewpoint of the individual who has become a cog in a great system of corporations, graft and exploitation, where the individual has small chance to "carry out his own theories or strive for the advancement of his own ideals."

The basis for the call to the farm is the great scientific improvement that has recently placed new powers at the disposal of the farmer. This progress has received great notice of late in the newspaper and magazine press and in government bulletins, and Mr. Collins's book brings these matters into very useful and available form in thirty- to forty-page chapters on such topics as irrigation, the new fertilization, new creations, new varieties, new practices, new machinery, etc.

The book is a treatise rather than an experience, and savors considerably of poetry as well as of business, and he makes some mistakes. It will be of use, however, to any one who wishes to easily inform himself of recent progress in agriculture or cheer that ever-increasing hope that lies in urban hearts and makes men think of a farm home.

J. RUSSELL SMITH.

University of Pennsylvania.

Fairlie, John A. *Local Government in Counties, Towns and Villages*. Pp. xii, 287. Price, \$1.25. New York: The Century Company, 1906.

In this volume of the "American State Series" Professor Fairlie has undertaken a considerable task in 287 pages. First, in three chapters, or fifty pages, he attempts both to describe and to sketch the development of the forms of local government in England and in the United States from Roman times down to the present. Second, he offers us in four chapters, or eighty

pages, an account of the "county" organizations, of their general characteristics and of their chief agencies, their interrelations and procedure. Third, he gives us a similar account in four chapters, or seventy-one pages, of the "Minor Divisions," viz., the town in New England and the townships and county districts in our central, southern and western states. Fourth, in five chapters, or sixty-eight pages, he summarizes the tendencies and methods of central or state supervision of the agencies of local government. A bibliography and an index follow the text.

The author does not, generally speaking, essay much beyond discrimination and description of the general and numerous species of local government that have developed in or that have been transplanted to the forty-six states making up our national government. He does not attempt, of course, much minute or particular description of each and all forms in each state, because of the obvious limitations of his space, but generalizes wherever common or like forms are discernible throughout groups of states, and specializes, usually, only when interesting or important variations have developed and persisted. He has given us a handy and valuable compendium of the general or major results of his extensive and minute studies previously made in the vast and almost illimitable wilderness of local government.

It is not easy to review such a text satisfactorily, for its contents do not readily yield to citation or reproduction *in minime*, and an effort results in little else than superfluous description or recital. Readers may or may not prefer the methods of treatment Dr. Fairlie pursues. Many doubtless would desire greater consideration of the conditions or causes affecting or producing the different forms or methods of local administration; or more discussion of the proper functions or work of the various organs and the proper construction thereof. There is but little consideration given herein to the potent influence of national government and its exigencies upon the varying developments of local agencies. Throughout much of the first part one is constantly impressed with the fact that the text gives us the results of the study of constitutions, statutes and ordinances rather than of first-hand investigations into the actualities of local government. Paper governments are one thing and practical government is likely, if not certainly, to be exasperatingly different. Nevertheless, it is not fair to quarrel with the author because he has chosen to give us an exposition of the anatomy or morphology rather than of the physiology and hygiene of local governments.

The volume is, however, subject to serious criticism because of the mode or style of presentation. The author has made a survey of our vast national area and has sought to compress in this brief compend descriptions of the countless contrary and divergent forms or growths and of their concurrent or reactionary tendencies. By reason of his desire to be comprehensive, detailed and specific, the author frequently confuses the reader in a mass of underbrush or leaves him grounded in a mud bank. We doubt if a student well versed in the history of English and American local government will have clear perspectives on completing the first three chapters, and an uninformed reader will find himself befogged. Professor Fairlie's method or purpose requires either two or three robust volumes,

wherein he can set forth details with great elaboration or brevities and generalities, if we are to have clear-cut views and sharp outlines. In the first two parts especially he gives us too much and blurs the vision. In the fourth part, on the contrary, wherein the subject-matter is not so various and variable, his discussion is but slightly subject to this criticism.

F. I. HERRIOTT.

Drake University, Des Moines, Iowa.

HILL, David Jayne. *A History of Diplomacy in the International Development of Europe*. Volume II. The Establishment of Territorial Sovereignty. Pp. xxv, 663. Price, \$5.00. New York: Longmans, Green & Co., 1906.

In the preface to this, his second volume, Mr. Hill states more clearly the ideals both as to matter and to method which have animated his writing. It is evident that his lengthy explanation has been called out by what was an almost unanimous criticism of his first volume—namely, that his work was not a history of diplomacy *per se*, but rather a general history, with a slightly increased emphasis placed upon diplomatic incident. The author now says of his work that "in order to adapt its contents to all classes of readers, although based primarily upon authentic documents, the matter has been presented in the form of a synthetic narrative in which the more special details have been interwoven with facts already familiar. It is believed that the assignment of new matter to its proper place in the general order of events and the association of it with facts already known is preferable to a more abstract treatment. The life of history resides in the current of events, and its lessons should be drawn directly from the narrative." Having thus defended the narrative form and the use of well known data, Mr. Hill next reasserts the existence of a real diplomacy in the Middle Ages, contending that a modern definition of diplomacy cannot justly be applied to what he considers its earlier manifestations. ". . . The essence of diplomacy does not lie in the character of its organs or its forms of procedure. Intrinsically, it is an appeal to ideals and principles rather than to force, and may assume a great variety of specific embodiments."

In fact, however, the criticism of the first volume was not directed against the use of a narrative form, but rather implied that the narrative so overshadowed the analysis as to make impossible any true conception of what the diplomacy of the period really consisted in, or what its value was in international development. In the present volume, covering the period from 1313 to 1648, there is still too much space devoted to mere detail, too much, in truth, of the general history type of writing, but, on the other hand, there is also a much more determined effort made to assert and explain permanent diplomatic traditions and customs arising from interstate intercourse. The narrative is exceptionally well done, for Mr. Hill has a genuine gift in this form of historical exposition, and yet the final impression received from the first six chapters of this second volume is one of disappointment in that so

little has actually been learned of the growth of diplomatic tradition, or of the formulation of rules of international action. In Chapter IV, for example, after fifty-six pages of historical summary relating to the acts, the policy and the so-called diplomacy of the Popes in their relations with states both within and without the Italian peninsula, all that the author is able to postulate in regard to the permanent conditions or the permanent results of this period is that the characteristic of its diplomacy was deceit, and that the one international custom formed was the establishment of permanent embassies in Europe. Mr. Hill himself writes that "the wars of Italy and the diplomatic negotiations connected with them rested upon no fixed principles whatever. Neither national interest, nor public morality, nor religious zeal had any place in them. Personal ambition, rivalry or resentment was their only spring of action." In fact, did not this epoch embody an "appeal to force" rather than to "ideals and principles"?

If diplomacy merely means the negotiations and treaties whereby one state deceived and cheated its neighbors, the details offered by Mr. Hill really constitute a history of diplomacy. But Mr. Hill himself unconsciously refutes this idea, for in the seventh and last chapter of the present volume he finally enters upon the period where diplomacy, resting upon accepted rules of international conduct, at last assumes a rôle of historical importance. In his introduction to this chapter on "The Development of a Sovereign State System," the author writes: "With the rise of Protestant states, Europe was broken up into groups of powers which no longer possessed a common bond, and in which religion was beginning to be considered as a function of the individual state. What then, were the normal relations of independent states recognizing no common spiritual adviser?"

This question might have been asked earlier if its conditions had existed; but it was, in effect, entirely new. Before it could be answered it was necessary that jurists should elaborate more clearly the conception of the state and the principles of jurisprudence affecting the relations of political communities, that experience should demonstrate the necessity of applying them in practice, and that the nations should agree to accept them as governing international intercourse and conduct." This necessity of formulating the normal relations of independent states implies that true diplomacy was but newly born. If, as Mr. Hill states, "the question was entirely new," then here surely the proper history of diplomacy begins, or at the best the few principles and ideas emanating from a former age deserve but a limited treatment. And the sharp break from the previous age is shown also in the author's method, for here, at last, he has different material to deal with and is not dependent on mere historical narrative, and here he discusses theories of states, of sovereignty, of neutrality, and analyses the writings and the influence of men like Bodin, or Gentilis, or Grotius. Mere narrative is still excessively used, but is now made the vehicle for conveying impressions of the birth and development of diplomatic conceptions.

In effect, then, Mr. Hill seems to the reviewer to have just arrived at the true beginning of his task—to have expanded in one volume, and in all but one chapter of a second, matter that might have been described and

analysed in an introduction of reasonable length. But Chapter VII gives promise of a greater service in later volumes, and, with the author's ability in expression, these volumes, if not sacrificed to narrative details, should furnish something of real value in historical literature. Volume II contains five tables on rulers and treaties from 1313 to 1648, four maps, and has an excellent index.

E. D. ADAMS.

Leland Stanford, Jr., University.

HILLIS, Newell Dwight. *Fortunes of the Republic*. Pp. 333. Price, \$1.20. New York: Fleming H. Revell Company, 1906.

This book was recently characterized by a business man as follows: "He apparently thinks that the way to learn all about social conditions in the United States is to go from city to city delivering lectures." Yet we are so unaccustomed to thinking in exact terms with regard to government and citizenship that the superlative optimism of this volume will undoubtedly seem to inspire many readers.

"If the rich are growing rich slowly through a falling rate of interest, the working people are growing rich rapidly through a swiftly rising wage. . . . As for morals, it is enough to say that for three years the losses through dishonest clerks have been steadily falling, while the conscience fund in Washington has been steadily rising. . . . Men cannot eat their feast in happiness while others are famishing." Such sentences, written with a desire to stem the tide of discontent, are calculated to make more socialists than the extreme philosophy of those who openly confess the doctrine. If the author had studied the contribution lists of any great city he could not have stated as facts that "The American heart is becoming as sensitive as an aeolian harp." In general, his statements of fact as to social and industrial conditions are about as accurate as the sentence: "While the news of San Francisco's sorrow was still hot upon the wires, eighty millions of people became good samaritans in one day." What actually happened was that eighty millions of people became excited for one day and a few thousands became good samaritans. Quite as far from the mark are the generalizations as to painters, poets, musicians, inventors of genius, who, it is said, "are the after fruits ripened in the warm atmosphere of universal intelligence."

Writing from a city where 150,000 children are from two to six years behind their proper grade in school, and where 400,000 are suffering from physical defects that make them unable to benefit from their schooling in proportion to outlay by the taxpayer; writing from a borough where tens of thousands of children are denied the privilege of proper schooling or even proper breathing, he offers the beautiful sentiment: "There is no position so high that the boy from the forge, factory or the farm may not aspire to and achieve the honor offered." After a year of exposure that has revolutionized the attitude of press and public toward corporate corruption and

what has hitherto been called American success, he says: "The great majority of the fortunes of this country have been made, not through fraud or oppression, but through ability that has done far more for the poor man than for its possessor." He disingenuously upbraids the working man for being discontent with his wages, and at the same time inveighs against churches that fail to pay more adequate salaries to missionaries and preachers. In elaborating this injustice he forgets what he has repeatedly said in other portions of the book about the benevolent rich, and declares: "I am ashamed of the selfishness of the wealthy. These men always ask others to do the sacrificing."

It is such thinking and such writing that furnish the soil that will forever produce corruption in business and in politics. Fortunately, it may be said that the optimism which the author says has been forced upon him by much travel and by the pressure of events, is not the kind that the leading pulpiteers of the country are meeting in their travels and are being forced by pressure of events to preach to their congregations.

WILLIAM H. ALLEN.

New York City.

Johnson, W. F. *Four Centuries of the Panama Canal*. Pp. ix, 461. Price, \$3.00. New York: Henry Holt & Co., 1906.

There are perhaps few subjects on which so much has been written in a fragmentary way as on that of the Panama Canal. Nearly all writings, however, treat of the subject from some special standpoint; some of them briefly and others in detail. The volume entitled "Four centuries of the Panama Canal" treats the subject chiefly from the historical and political standpoints. Technical matters are barely touched on, while the commercial and military aspects are not referred to.

The historical part is quite full, particularly that covering the early days, and shows great research on the part of the author, who has not allowed an important event to escape him. No better account in a connected form of the doings of the explorers in the early days of this great enterprise is known to exist.

The name of the work would indicate that it treats of the Panama Canal alone, but all the other projects of an interoceanic waterway come up for consideration, as they naturally would, on account of their intimate connection.

Perhaps the greatest defect of the work is the failure of the author to discuss the commercial and military aspects. These are subjects of great importance. But for the commercial and military value to the United States it is not probable that any canal across the isthmus would ever have been attempted by this government. Moreover, there is a good deal of misapprehension in the popular mind on both of these points. Many believe that the canal will revolutionize navigation; others that it will be of little benefit. There is a mean between these two extremes, and it is of importance that the

public mind should be set right in respect thereto. This phase of the subject was investigated a few years ago by Mr. Emory R. Johnson, of the University of Pennsylvania. His work, printed as an appendix to the Report of the Isthmian Canal Commission of 1901, comprises a vast amount of research and labor, and affords a basis for a full consideration of the commercial value of the canal. The military value of the canal is treated in the same report of the Commission.

It is not a pleasant task to point out defects, particularly as the author seems to fully appreciate them, and makes ample apologies for them in his preface. In dealing with the technical features the author has been led into several errors. Some result from his bias in favor of a sea-level canal, which he makes no effort to conceal. These errors, however, are not of great importance, and do not detract in great degree from the merits of the book.

Considerable space is devoted to the discussion of the formation of the Republic of Panama and the part taken by the United States at the time it was formed. While these relate properly to the history of Panama, they only relate remotely to the canal. The effort to justify the action of the United States as to its course at the time of the formation of the Panama Republic is more argumentative than historical.

The appendices, which are included in the volume, and which show the various treaties made by the United States with Great Britain, Colombia and Panama, are exceedingly useful. They enable the critical reader to form his own judgment as to their bearing and effect on the course of events. It is but just to say that on the whole the work is very creditable and will form a useful addition to the library of any student of Isthmian Canal affairs.

PETER C. HAINS.

Washington, D. C.

Joyce, P. W. *A Smaller Social History of Ancient Ireland*. Pp. xxiii, 574. Price, \$1.25. London and New York: Longmans, Green & Co., 1906.

The civilization of early Ireland has not received the attention it deserves from those interested in early social development. This is the more to be wondered at as no other country of Europe presents a more promising field for research. Ireland has been subject to comparatively few foreign influences, and as a consequence her social institutions underwent remarkably little change until far along in the historical period. Moreover, a rich native literature existed, much of which has been preserved not only in the island itself, but scattered through the monastic archives of Europe, where it was carried by the Irish missionaries of the seventh and eighth centuries. The Celtic revival is gradually bringing this material to light, and the present book, an abridgment of the author's two-volume work, "*A Social History of Ancient Ireland*," published in 1903, gives an excellent idea of our present knowledge in this field. It is intended for the general reader, and is written in a pleasing and popular style. The author gives his own conclusions on

the various topics and avoids controversial discussions, the reader being referred to his large work for a full citation of authorities. The book covers the period from the earliest times to the Anglo-Norman invasion of the twelfth century, and is divided into three parts, entitled, respectively, Government, Military System and Law; Religion, Learning and Art; and Social and Domestic Life.

It is difficult to give a clear description of the government of early Ireland, with its confused system of tribal kings, district kings and provincial kings, culminating in the high king with his residence at Tara. There was no adequate subjection of one ruler to another, and, in spite of an elaborate system of hostages, it is evident, though this point is not dwelt upon, that the land was bound to be subject to the interminable warfare, feuds and jealousies inseparable from its clan organization until some form of order should be introduced by an effective foreign occupation. Unfortunately for Ireland, such outside influence was never applied systematically and wisely.

Mr. Joyce, who is one of the commissioners for the publication of the ancient laws of Ireland, has drawn much of his material from the old Brehon laws. These furnish most important information and present many interesting points of resemblance to other codes of law as well as differences from them. For instance, the ordeal was a common method of procedure, and such well known forms of it are found as the lot, boiling water and hot iron, as well as the curious custom, evidently a form of ordeal, where a creditor set himself before his debtor's door and fasted, the latter being obliged to abstain from food also until he gave way and paid the debt or until the creditor withdrew exhausted. Failure on the part of the debtor to submit to this test resulted in outlawry. The Irish knew also a system of *tabus* such as Cæsar seems to refer to among the Gauls. A very highly developed nobility existed among the Irish from the earliest times, as was natural in a society organized by clans, and all lands except the common lands of the clan were owned by the two highest classes, the kings and chiefs. The remainder of the freemen were divided into two classes, one owning cattle and renting land and the other renting both cattle and land from their superiors. There was besides a large class of unfree men or serfs.

In the section dealing with religion one chapter is devoted to paganism and another to Christianity. In the latter we are not told the things we should most like to know, *e. g.*, the practical effect of the new religion on the character of the people and of their institutions and the reasons for the isolation of the Irish church and its departure from the customs and practices of the other churches of Western Europe in the sixth and seventh centuries. Most of the chapter is taken up with an account of the different orders of Irish saints and their missionary work in other countries.

A good account of Irish literature occupies Chapters VIII to XII, which take up the various kinds of writings and give descriptions of such old miscellaneous collections as the "Book of the Dun Cow" (so called from having been originally written on parchment made from the skin of St. Ciaran's pet

cow), the "Book of Leinster," the "Speckled Book" of MacEgan, etc. In dealing with the historical writings and traditions of early Ireland the author is not always happy in his arguments to prove their accuracy. As an example of trustworthy tradition he relates the tale of a descent of the Picts upon the coast some centuries before Christ and of their subsequent departure to conquer Scotland. Before leaving they sought wives from the Irish and received them, but on condition that the right of succession to the kingship should always be vested in the female line. All this, says Joyce, is confirmed by the Venerable Bede, who relates practically the same story, and adds that this custom of royal descent continued among the Picts to his own day. But what is the value of Bede's evidence for an event said to have occurred 800 years before his time, unless he had independent sources of information? What is to show that he did not learn the story from the same source as the Irish writers, viz., from the Picts, the common neighbors of both? And what is the whole tale but one of those myths invented to explain matriarchy, a method of succession common to all primitive society, but the memory of which had died out among the Picts except in the case of royal descent?

The superiority of Ireland's schools and Irish learning in the centuries immediately succeeding St. Patrick is strongly and properly emphasized and the less known facts of their attainments in the sciences, especially chronology, as well as in languages, is brought out; but Joyce shares the mistake of most enthusiasts in pressing his points rather too far. For example, it is extremely doubtful if Duns Scotus can be claimed as an Irishman, while the statement that Alcuin was educated at Clonmacnoise is positively disproved by his own correspondence and his earliest biography, written before 829, which show that from an early age he was a pupil at the famous Episcopal school of York. The tendency to look on the bright side only of all things Irish is also seen in the author's suppression of the dark picture of society drawn by contemporary foreigners. Geraldus of Cambreasis, who was well acquainted with the island, is only cited for his favorable comments while his more frequent animadversions are passed over in silence. The life of St. Malachi, bishop of Armagh, written by his friend St. Bernard at whose monastery he died, is not even referred to, although it is full of details regarding the low state of religion and morals in Twelfth century Ireland. In fact, most of the unfavorable evidence of this nature is either glossed over or not referred to at all.

Nearly one-half of the book is taken up with the description of social customs and domestic life, separate chapters being devoted to such topics as the family, the house, food and public hostels, dress, agriculture, the crafts, mills, clothmaking, weights and measures, commerce, fairs and sports, burial customs, etc. Here the author is at his best, and his extremely wide acquaintance with the early literature enables him to give a vivid picture of society. Here, as throughout, the chief criticism of the author's method of treatment is his failure to indicate the exact period to which his descriptions apply. Older and newer customs are found side by side and there is little indication of change or development; in the six centuries under discussion there are few marks to distinguish one from another. The general

view of society, however, thus given bears a striking likeness in many of its traits to more modern customs and recalls Mommsen's famous comparison of the Gauls and the Irish. The funeral customs, including the "wake" and its lively celebrations, the love of athletic contests, the personal vanity, the fondness for fighting, personal devotion to the leader, the attendance on fairs, hospitality, wit and geniality, the love of poetry and music, are traits that have all come down to the present time. Even the addiction to strong waters characterized the people in ancient times, though their chief reliance for intoxication was upon ale made from barley. The great national beverage of modern days seems to have been unknown until near the close of the Middle Ages, the first mention of it being found in the Annals of the year 1405, under which date occurs the significant entry that one, Mac-Rannal, died from an overdose of *uisge*.

The main traits of this early society are clearly and convincingly portrayed, and, in spite of certain minor defects of treatment, such as the too frequent introduction—for the non-Celtic reader—of old Irish terms, and the unnecessary comparisons with Greek and Roman customs, it is the most instructive sketch of ancient Irish society that has yet appeared.

A. C. HOWLAND.

University of Pennsylvania.

Lucas, C. P. *The Canadian War of 1812.* Pp. 270. Price, \$3.00. Oxford: Clarendon Press, 1906.

This book is written from the standpoint of an English imperialist. His interest in the war comes from the fact that it led to the rise of Canadian patriotism, and so was a factor in preventing the absorption of Canada by the United States. A distinctive feature of the book is the defense of the burning of Washington, on the ground of retaliation for the burning of York, England being made to pose as the avenger of Canada. At the same time the author preserves an unusually just balance in judging disputed points, and writes nothing that should wound the sense or sensibilities of Americans. This result is partly obtained by a limitation of the discussion of the causes of the war to four pages, and by the treatment of the particularly sore point, the employment of Indians, along modern imperialistic lines calculated to appeal to both countries (pp. 80-82). Perhaps the same view of the amenities of the case caused the author to limit his mention of the western causes of the war to a single reference (p. 284).

The title of the book naturally prepares one for the slight attention given to naval affairs; it nevertheless becomes obvious that this is not due to any lack of knowledge or appreciation of the importance of sea power. The main portion of the book is a straightforward account of the land operations of the war, written almost wholly from official dispatches, which have been very thoroughly examined. That the results do not present much that is novel is due rather to the diligence of Mr. Lucas's predecessors than to his own lack of zeal. The few errors, as the reference to Tecumseh's presence

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at the battle of Tippecanoe (p. 17), do not bear directly upon the narrative. The narrative is compact, an enormous mass of fact being included, but it is probable that a person unfamiliar with the course of events might complain that the important facts were not sufficiently distinguished. On the other hand, one of the strongest points is the treatment of the petty frontier forays, and possibly the truest impression to be left on the mind is one of confusion.

Particularly good is the discussion of Hull's surrender and of the battle of Plattsburg. The book is very carefully gotten out and includes eight maps, six of which are beautifully reproduced from Melish's "Military and Topographical Atlas of the United States, including the British Possessions and Florida," etc., of 1813. The style is good scientific prose, and there is a fair index.

CARL RUSSEL FISH,

University of Wisconsin.

Reynolds, John S. *Reconstruction in South Carolina, 1865-1877.* Pp. 522.

Price, \$2.00. Columbia, S. C.: The State Company.

The main body of this work is more a chronicle than a history. Written in the midst of the state archives, and first published in a Columbia (S. C.) newspaper in instalments, dealing with the successive periods in sequence of legislative sessions, the book gives full annals of legislation, party conventions and campaigns, and all military, riotous or conspiratory occurrences which tended to affect the course of politics. The book is heavily documented with extracts of laws, platforms, addresses, reports and resolutions, lists of members, record of yeas and nays, etc. These weigh upon the narrative and make the reading tedious, especially in the first half of the work. With the closing period of reconstruction, however, the author seems to reach the field in which his own memory is more active and his interest more lively. The state campaign of 1876, in the discussion of which South Carolinians in general take great pride, is admirably treated. By virtue of the author's abundant personal knowledge and his zest, and a broadening of the treatment, the narrative is here presented, not only convincingly, as always, by force of proofs adduced, but with a sustained interest for the reader. The book is concluded with a chapter summarizing the spoliation by the radical government and a brief chapter of "reviews and reflections," which presents a strong analysis of the policies, personal equations, contests and transitions in reconstruction politics. The book is written on the whole with poise. The terms used are sometimes too strong, but in general the epithets are moderate and proven by the context to be justified. Little attention is given to anything not directly connected with politics.

From the substance of the book the strongest impression gained by the reviewer is that of the conservatism, saneness and insight usually exercised by the guiding South Carolina Democrats of the period, as contrasted with the fatuousness of such of the Republicans as had purposes beyond the

enjoyment of good pickings. A single generous quotation will suffice; and that, taken, not from the author's narrative, but from an address (quoted on pp. 90-91) by the Democratic convention in 1867 "to the colored people of South Carolina":

"Your present power must surely and soon pass from you. Nothing that it builds will stand and nothing will remain of it but the prejudices it may create. It is, therefore, a dangerous tool that you are handling. Your leaders, both white and black, are using your votes for nothing but their individual gain. . . . Offices and salaries for themselves are the height of their ambition, and so that they make hay while the sun shines they care not who is caught in the storm that follows. . . . What few enterprises are carried on are only the work of southern men who have faith that the present state of affairs is but temporary.

"We therefore urge and warn you, by all the ties of our former relations still strong and binding in thousands of cases, by a common Christianity and by the mutual welfare of our two races, whom Providence has thrown together, to beware of the course on which your leaders are urging you in a blind folly which will surely ruin both you and them.

"We do not pretend to be better friends to your race than we are to ourselves, and we only speak when we are not invited because your welfare concerns ours. If you destroy yourselves you injure us, and though but little as compared with the harm you will do yourselves, we would, if we could, avert the whole danger.

"We are not in any condition to make you any promises or to propose to you any compromises. We can do nothing but await the course of events—but this we do without the slightest apprehension or misgiving for ourselves. We shall not give up our country, and time will soon restore our control of it. But we earnestly caution you and beg you in the meanwhile to beware of the use you make of your temporary power. Remember that your race has nothing to gain and everything to lose if you invoke that prejudice of race which since the world was made has ever driven the weaker tribe to the wall. Forsake, then, the wicked and stupid men who would involve you in this folly and make to yourselves friends and not enemies of the white citizens of South Carolina."

Such documents as this are fairly characteristic of the book. This being true, its value as a contribution and a work of reference is established.

ULRICH B. PHILLIPS.

University of Wisconsin.

Rhodes, James Ford. *History of the United States from the Compromise of 1850 to the Final Restoration of Home Rule at the South in 1877.* Vol. VI, pp. xx, 440; Vol. VII, pp. xiii, 430. Price, \$2.50 each. New York; The Macmillan Company, 1906.

These are the final volumes of a truly monumental work begun some twenty years ago. They cover the period from 1866 to the inauguration of Presi-

dent Hayes in March, 1877, and the withdrawal of federal troops from the south. The sixth volume opens with a discussion of the fourteenth amendment and concludes with the presidential election of 1868. It deals mainly with the reconstruction of the southern states, the struggle between Congress and the Executive and the foreign relations of the United States during Johnson's term. The seventh and last volume begins with the *Credit Mobilier* scandal and ends with the restoration of home rule at the south. It is concerned principally with the aftermath of reconstruction: "Carpet-bag" rule in the south, Ku-Klux disorders, the breakdown of the reconstruction policy and the scandals in Congress and in the civil service of the United States.

It was originally Mr. Rhodes's intention to bring his narrative down to the inauguration of President Cleveland, but further reflection, he tells us, convinced him that a more natural close was the withdrawal of the federal troops from the southern states in 1877 and the final restoration of home rule in those states. He gives, as an additional reason for abandoning his original plan, his lack of "basic knowledge" for dealing with the social questions which appear after 1877. Nineteen years of almost exclusive devotion to the study of a single period of American history, he says, has had a tendency to narrow his field of vision, and before proceeding further he feels the need of a systematic study of the history of Europe during the eighteenth and nineteenth centuries, "in order to bring to bear the light which the experience of those countries may throw upon our own progress since 1877." What Mr. Rhodes says of the year 1877 as the end of an epoch will be admitted, yet his change of plan will cause keen regret among the many who have eagerly watched for the appearance of his successive volumes during the last fifteen years. The publication of each has been a sort of "event" in the history of historical writing in America, and it is to be hoped that after he has acquired the additional information of which he feels need he will resume his narrative and bring it down, not only to 1885, but even to the present time. It may be stated, without fear of successful impeachment, that no other period of American history has been so well and interestingly written as the one covered by Mr. Rhodes. Although seven volumes have been devoted to the history of about thirty years, there is no useless detail to weary the reader, but a concise, well-balanced story, that can be followed with unflagging interest by the general student as well as the specialist. From first to last Mr. Rhodes's style has been marked by a clearness and a charm which has made his volumes of fascinating interest. In method of treatment he has shown a fairness, a sympathy and a judicial calmness rarely found in a historian who attempts to tell the story of events, many of which are within the reach of his own memory, and most of which are marked by passion and bitterness. Few, if any, writers of American history have so thoroughly exploited the sources from which they drew their facts or devoted such painstaking efforts to reach accurate and just conclusions. His power of characterization, as we see it exemplified in his portraits of John Brown, Lincoln, Lee, Grant, Davis and many others, is one of his most conspicuous literary merits. Taking the work as

a whole, our judgment must be that it is not likely to be superseded in the future.

Of the two volumes under review there is little to be said by way of criticism. Dealing with the most difficult of all epochs of American history—a period in which almost every act has been the subject of bitter controversy—Mr. Rhodes has handled his theme with a good sense of proportion, judgment and fairness which it would be difficult to improve upon. His judgments upon the measures and the men of the time are usually frank and candid; indeed, are sometimes severe, but they are always supported by such an array of evidence as to compel conviction in the mind of the reader. The reconstruction policy he characterizes as “shortsighted, even from the partisan point of view,” and “repressive, uncivilized and unsuccessful” (VII:171). Its worst feature, he correctly says, was not the military government, but the rule of the negro, which was much worse than honest government by American soldiers would have been (VI:29). The north erred, he says, in assuming that because the south did not admit that she had been wrong and display at once a strong national feeling, she did not accept the accomplished facts. No large policy in our country has ever been so conspicuous a failure, is Mr. Rhodes’s judgment, as that of forcing negro suffrage upon the south (VII:168). This policy brought no real good to the negroes; few of them ever developed any political capacity, and none of them in comparison with their white associates attained the least distinction. In a word, the author concludes, the negro, politically, has been a failure. Against all the warnings of science and political experience he was started at the top, and, as is the fate of most of such unfortunates, he fell to the bottom (VII:170). Of those concerned in the *Credit Mobilier* affair, Colfax and Garfield swore falsely or had defective memories (VII:17), and the evidence against other members of Congress was very damaging. Grant was personally honest, but his shielding of Babcock and Belknap was reprehensible. During his administration the high water mark of corruption in national affairs was reached (VII:191). Some of Blaine’s transactions were disreputable, and in his defense of April 24, 1876, he told “six distinct falsehoods” (VII:204). The scandal and corruption which permeated almost every department of the national government was one of the legacies of reconstruction, but, as Mr. Rhodes observes, the American people remained sound at the core.

J. W. GARNER.

University of Illinois.

Taylor, F. M. *Some Chapters on Money*. Pp. 316. Ann Arbor, Mich.: George Wahr, 1906.

Professor Taylor’s work was intended for exclusive use in college classes. It was printed, in a very limited edition of 300 copies, for the use of the students in the University of Michigan, and it must be judged very largely from this point of view.

We already have a number of books upon this subject which can, with

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greater or less success, be used in college classes. But, as the reviewer sees it, there was room for just such a work as Professor Taylor's. He has made one of the best, if not the very best, book for such use. In the hands of the author such a work must be of very great importance and value to the college students. We further believe that in the hands of any successful teacher such a work will prove to be most advantageous to the college student. The style and method of treatment have much that will attract the student, and with a few changes they would prove equally attractive to the general reader. Since the book was written expressly for the college man, it was necessary that its method should be especially adapted to just such a class of readers.

Professor Taylor has given most excellent chapters on the following topics: The nature and functions of money; the typical monetary system; monetary principles—the natural laws of circulation; the geographical movement and distribution of money; the money standard—principles governing; the natural laws regulating changes in the value of money; the requisites of a good monetary standard; the proper regulation of the banknote circulation. So thoroughly and clearly has Professor Taylor given to the student the chief points and problems of each of these topics, that he must be a dull student who is not only enlightened but also stimulated. As the author says, his work does not cover the whole field of money in a perfectly complete way, but his book leaves little to be desired. In these statements and expositions the author has shown a strong grasp of a very difficult and important subject, and his treatment is clear, concrete, and forcible.

That all of his colleagues will quite agree with him in a number of his propositions we do not believe; and, of course, this is never to be expected. But whether or not we accept some of his positions, we must say that Professor Taylor has shown fairness and keen intelligence in his treatment of his subject. We would like to take issue with him on certain of his propositions, but space will not permit. And upon the whole we think most highly of the work.

CHARLES LEE RAPER.

University of North Carolina.

Wood, William. *The Fight for Canada.* Definitive edition. Pp. xx, 370. Price, \$2.50. Boston: Little, Brown & Co., 1906.

The author writes with clearness and force. His characterizations are often presented with succinct and epigrammatic phrase. Bute was "a flunkey turned master by the favour of the King's mother" (p. 20). Vaudreuil "was a liar, a backbiter and a pettifogger, utterly unfit for his great position . . . ; and the best excuse that can be made for him is that he was almost as great a fool as a knave" (p. 47). One defect in the author's treatment is that all men are either black or white; none are, to use Prof. Morse Stephens's illuminating phrase, pale gray. But, notwithstanding this temperamental defect, the characterizations of such men as Bigot, Wolfe and Montcalm are stimulating and vivid.

The scholarly and thorough investigations of Dr. Doughty, the Archivist of the Dominion of Canada, have brought to light a mass of detail bearing on the taking of Quebec. It is on this material that Chapters VII, VIII and IX, dealing with the topics the Siege of Quebec, the Battle of the Plains and the Fall of Quebec, are based. The author pays generous tribute to Parkman, whose insight, in default of the newer sources, led him to see in what directions investigations should be followed. But it is the fact that, to quote the author's words, the "whole subject has never been described from the naval and military point of view combined together," which, to the author, especially justifies this study. It is to the significance of sea-power, in the events leading up to the changing of the destinies of the New World, that especial attention is devoted;—" . . . the command of the sea has always been the one original and overmastering force which has determined the whole development of racial domination in the New World" (p. 26). In Chapter II this point of view is treated in detail. The tone of the discussion is indicated by the following extract: "It was the navy alone that enabled Pitt to wage war on a world-wide scale at all, the navy alone that gave him a united service with which to isolate and defeat the forces of a Greater France, and the navy alone that afforded to him the opportunity of using Wolfe's army at Quebec" (p. 82).

The author gives much detail concerning the personnel and technical equipment of the army and of the navy, which, while interesting in itself, might be handled to better advantage in a distinctly technical work. But the bias of the author for this phase of the work does not blind him to the economic and social factors in the situation of New France, factors which exercised an important bearing on Wolfe's victory. The process whereby New France was weakened and despoiled by Bigot and his associates, whom the author calls "one of the very worst bands of chartered brigands known to history," the lack of adequate transportation ways, the crushing burden of the militia service, are all developed in a way which makes clear the reason for the failure of the French colonial experiment. The author's strong convictions on present-day subjects, which show when, in speaking of Bute, he says "he had not one spark of that honest homely virtue which may sometimes redeem the contemptible pettiness of the Little Englander!" show a lack of judicial restraint. To the author the fight for Quebec is in reality a plea for imperial integration.

The book contains a map of Canada and the north part of Louisiana, with the adjacent countries photo-engraved from the original, and a map of Wolfe's Quebec campaign. The latter map has been developed by the author from the best source material. There is a brief collection of notes contained in the section (pp. 313-342), indicating the source material on which the different chapters are based. These notes are enlivened at times by comments in the author's best caustic vein. In addition, fifteen pages are devoted to a bibliography of the most important source material.

S. J. McLEAN.

University of Toronto.

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In order to arouse an interest in the study of topics relating to commerce and industry, and to stimulate an examination of the value of college training for business men, a committee composed of

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have been enabled, through the generosity of Messrs. Hart, Schaffner and Marx, of Chicago, to offer again in 1908 four prizes for the best studies on any one of the following subjects:

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